OPERATOR/SERVICE MANUAL

MODEL: XN650R, XN650ROI, XT728R, XT728ROI, XM832R, XM832ROI, XJ834HG, XD836Y

STOMPER® - 2 Cycle Oil Injected and Pre-Mix,
4 Cycle and Diesel

A 100% employee-owned American manufacturer

REVISION: F 5/02 P/N 56318

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FOREWORD

These instructions include:

Safety regulations
Operating instructions
Maintenance instructions

These instructions have been prepared for operation on the construction site and for the maintenance engineer.

These instructions are intended to simplify operation of the machine and to avoid malfunctions through improper operation.

Observing the maintenance instructions will increase the reliability and service life of the machine when used on the construction site and reduce repair costs and downtimes.

Always keep these instructions at the place of use of the machine.

Only operate the machine as instructed and follow these instructions.

Observe the safety regulations as well as the guidelines of the civil engineering trade association. Observe safety rules for the operation of compactors and the pertinent regulations for the prevention of accidents.

Stone Construction Equipment, Inc. is not liable for the function of the machine when used in an improper manner and for other than the intended purpose.

Operating errors, improper maintenance and the use of incorrect operating materials are not covered by the warranty.

The above information does not extend the warranty and liability conditions of business of Stone Construction Equipment, Inc.

Warranty Information

Please enter the following data. This will help expedite any service or warranty work.

1. Machine Type: _____

   Machine S/N: _____

2. Engine Type: _____

   Engine S/N: _____

3. VIN: _____

4. Purchase Date: _____

5. Dealer/Distributor Information:

   Name: _____

   Address: _____

   _____

   Phone #: _____

   Fax #: _____

Location of above information:

1. Information on S/N tag.
2. Information on engine tag.
3. Information on S/N tag - if applicable.
4. Date you purchased machine.
5. Dealer machine was purchased from.

Stone Construction Equipment, Inc.
P.O. Box 150, Honeoye, New York 14471
Phone: (800) 888-9926
Fax: (585) 229-2363

Limited Warranty

The Manufacturer warrants that products manufactured shall be free from defects in material and workmanship that develop under normal use for a period of 90 days for concrete vibrators and electric pumps, one year for Rhino®, Bulldog®, WolfPac Rollers™, trowels, Stompers®, saws, forward plates, engine powered pumps, Lift Jockey™, Mortar Buggy™ and 6 months for all other products from the date of shipment. The foregoing shall be the exclusive remedy of the buyer and the exclusive liability of the Manufacturer. Our warranty excludes normal replaceable wear items, i.e. gaskets, wear plates, seals, O-rings, V-belts, drive chains, clutches, etc. Any equipment, part or product which is furnished by the Manufacturer but manufactured by another, bears only the warranty given by such other manufacturer. (The Manufacturer extends the warranty period to "Lifetime" for the drum bearings and seals for the mortar mixers, and agrees to furnish, free of charge, the bearings and seals only upon receipt of the defective parts. The warranty is two years for eccentric bearings on the forward plate compactors, mortar and plaster mixer drums, trowel gearboxes and five years on the Bulldog trench roller eccentric bearings.) A Warranty Evaluation Form must accompany all defective parts. Warranty is voided by product abuse, alterations, and use of equipment in applications for which it was not intended, use of non-manufacturer parts, or failure to follow documented service instructions. The foregoing warranty is exclusive of all other warranties whether written or oral, expressed or implied. No warranty of merchantability or fitness for a particular purpose shall apply. The agents, dealer and employees of Manufacturer are not authorized to make modification to this warranty, or additional warranties binding on Manufacturer. Therefore, additional statements, whether oral or written, do not constitute warranty and should not be relied upon.

The Manufacturer's sole responsibility for any breach of the foregoing provision of this contract, with respect to any product or part not conforming to the Warranty or the description herein contained, is at its option (a) to repair, replace or refund such product or parts upon the prepaid return thereof to location designated specifically by the Manufacturer. Product returns not shipped prepaid or on an economical transportation basis will be refused (b) as an alternative to the foregoing modes of settlement - the Manufacturer's dealer to repair defective units with reimbursement for expenses, except labor, and be reviewed with the Manufacturer prior to repair. A Warranty Evaluation Form must accompany all warranty claims.

Except as set forth hereinabove and without limitation of the above, there are no warranties or other affirmations which extends beyond the description of the products and the fact hereof, or as to operational efficiency, product reliability or maintainability or compatibility with products furnished by others. In no event whether as a result of breach of contract or warranty or alleged negligence, shall the Manufacturer be liable for special or consequential damages including but not limited to: Loss of profits or revenues, loss of use of the product or any associated product, cost of capital, cost of substitute products, facilities or services or claims of customers.

No claim will be allowed for products lost or damaged in transit. Such claims should be filed with the carrier within fifteen days.

Effective September 2001.

Stone Construction Equipment, Inc. Phone: 1-800-888-9926 • 1-585-229-5141
8662 Main Street, P.O. Box 150 **Fax: 1-585-229-2363**
Honeoye, NY 14471-0150 www.stone-equip.com • e-mail: sceny@mcimail.com

1. TECHNICAL DATA

SOUND AND VIBRATION DATA

1.1 MACHINE SOUND LEVEL TEST

Machine Type:	Stomper Compactor
Sound Level Meter Calibration Date:	December 9, 1994
Meter Type:	Simpson Model 886-2 Type 2
Test Date:	December 9, 1994
Test Conditions:	
Temperature:	5 degrees Fahrenheit/-5 degrees Celsius
Ambient Sound:	55 dba fast mode
Soil Condition:	Sand and grit
Moisture Limit:	Approximately equal to 50 percent
Engine Speed:	5000 rpm/83 Hz
Frequency:	700 rpm/11.7 Hz
Test Site:	Honeoye, New York USA
Sound Level at Operator Position:	98 dba

1.2 VIBRATION TESTS

The effective acceleration value, determined with respects to ISO 8662, Part I and calculated in the domain are as follows:

Model	**RMS Acceleration, M/S^2**
XN650R	5.7
XT728R	5.1
XT728ROI	5.1
XM832R	6.5
XM832ROI	6.5

2. HEALTH & SAFETY

SAFETY USE

These machines are designed to carry out the function of compacting material of the non-cohesive, bituminous and granular varieties.

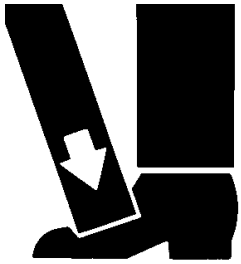
If used correctly they will provide an effective and safe means of compaction and meet the appropriate performance standards.

It is essential that the driver/operator of the machine is adequately trained in its safe operation, be authorized to drive it, and have sufficient knowledge of the machine to ensure that it is in full working order, before being put to use.

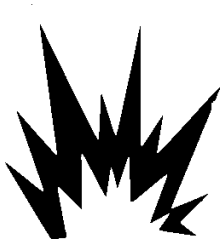
SAFETY PRECAUTIONS

Before using this equipment, study this entire Owner's Manual to become familiar with its proper operation. Do not allow untrained or unauthorized personnel, especially children, to operate this equipment. Use only factory authorized parts for service. When safety decals are destroyed or missing, contact factory immediately for replacement. For the safety of yourself and others, it is imperative that the following rules are observed. Failure to do so may result in serious injury or death.

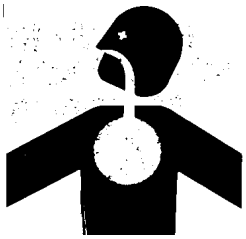
- This notation appears before warnings in the text. It means that the step which follows must be carried out to avoid the possibility of personal injury or death. These warnings are intended to help the technician avoid any potential hazards encountered in the normal service procedures. We strongly recommend that the reader takes advantage of the information provided to prevent personal injury or injury to others.



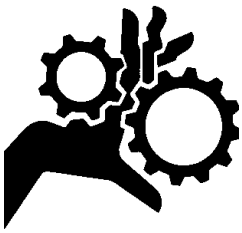
- Keep feet clear of the machine's shoe at all times.
- Be sure no one is in a position to be hit by operator's hand or arm during starting.
- Do not leave the machine running unattended.
- Keep work area free of bystanders.
- Do not operate this machine on any surface where it can get out of control.



- Transport and handle fuel only when contained in approved safety containers.
- Do not smoke when refueling or during any other fuel handling operation.
- Do not refuel while the engine is running or while it is still hot.
- If fuel is spilled during refueling, wipe it off the engine immediately and discard the rags in a safe place.
- Do not operate the equipment if fuel or oil leaks exist - repair immediately.
- Never operate this equipment in an explosive atmosphere.



- Never operate any gas powered equipment in a poorly ventilated or enclosed area.
- Avoid prolonged breathing of exhaust gases.



- Never perform any work on this equipment while it is running.
- Always stop the engine and disconnect the spark plug wire to prevent accidental starting.
- Keep hands, clothing, and jewelry away from all moving parts.
- Make sure all safety guards are secured and in proper position.

- Avoid contact with hot exhaust systems and engines.
- Allow engine to cool before performing any repairs or service.

- Ear protection required when operating this equipment.

3. OPERATIONS 2-CYCLE OIL INJECTED

3.1 Specifications Oil-Injected Stomper®

MODEL	STONE XN650ROI	STONE XT728ROI	STONE XM832ROI
Dimensions			
Weight	125 lbs.	130 lbs.	158 lbs.
Dimensions (L x W x H)	30.3" x 13.5" x 36.5"	28.5" x 15" x 38"	28.5" x 15" x 38"
Shoe Size	10" x 13"	11" x 13"	11" x 13"
Operating System			
Power	4 hp. Robin	4 hp. Robin	4 hp. Robin
Engine Specs	EC12D	EC12D	EC12D
Engine RPM	4300	4300	3900
Fuel Mixture	50:1	50:1	50:1
Fuel Tank Capacity	3 qts.	3 qts.	3 qts.
Fuel Tank Material	Polyethylene	Polyethylene	Polyethylene
Performance			
Impact Force	2600 lbs.	2800 lbs.	3200 lbs.
Max. Blows/ Min.	780	700	660
Max. Forward Travel Speed	60' - 70' / Min.	60' - 90' / Min.	50' - 64' / Min.
Max. Productivity	3500 Sq. Ft./ Hr.	4950 Sq. Ft./ Hr.	3500 Sq. Ft./ Hr.
Max. Lift	18"	18"	22"
Max. Amplitude	2.5"	Up to 4"	Up to 3"
Options	Extension	Extension	–

*Soil conditions can affect specifications.

OPERATING INSTRUCTIONS

3.2 OPERATING PRINCIPLE

A tamping shoe is mounted at the lower end of a cylindrical spring housing. A piston, installed between massive opposing springs inside the spring housing, is actuated by a connecting rod and crank system which is driven by a high speed, 2 cycle gasoline engine through a gear train and centrifugal clutch. The piston alternately loads and unloads the springs. This results in a rapid lifting up and ramming down action of the tamping shoe to compact the underlying material.

The Stomper is effective for compaction of a wide variety of job soil substances, particularly clay lumps, silt, loam and all granular materials. Although relatively light in weight and easy to operate, the Stomper delivers a tremendous impact to the soil.

These instructions contain information to guide you in efficient use and proper maintenance of the Stomper. To get long and trouble-free service from this power tool, periodic maintenance of the engine and machine is essential.

The Stomper is shipped completely assembled and only requires filling with 2 cycle oil and regular unleaded gasoline as well as a brief check of lubricant levels in preparation for operation. You should first study these instructions.

3.3 PRE-OPERATION CHECKS

CAUTION: Sections on fuel mixture, air cleaner and lubrication must be followed exactly. Failure to follow these instructions may void the warranty.

3.3.1 Spark Plug

Check and clean spark plugs regularly. A fouled, dirty, or carboned spark plug causes hard starting and poor engine performance. Set spark plug gap as per specifications. See Engine Manual.

3.3.2 Starter Screen

This screen keeps dirt, etc. from entering the fan housing and clogging the air cooling passages. Because this engine is air-cooled, it is necessary to keep this screen clean at all times to permit the unrestricted passage of air into the fan housing.

3.3.3 Fasteners

Check all nuts and bolts after 4 hours, then every day of operation. Torque values for fasteners are found in the appropriate part drawings located in the back section of this manual.

3.3.4 Fuel Mixture

The gasoline and 2-cycle oil ***are not*** mixed prior to filling the unit.

Use regular unleaded gasoline. High test is not recommended.

Strain the fuel through a fine meshed screen when filling gasoline tank on engine to remove dirt if present.

NOTE: **Special ratio for initial break-in period.**
See chart below

FUEL Gasoline	50:1 EC12 Two Cycle Oil	20:1 All Units Break-In Two Cycle Oil Mix (first 10 hours)
5 Gallons	.80 pints (12.8 oz) (.38 L)	2.00 pints (32 oz) (.94 L)
1 Gallons	.16 pints (2.56 oz) (..08 L)	.40 pints (6.4 oz) (.19 L)
2 Quarts	.08 pints (1.28 oz) (..04 L)	.20 pints (3.2 oz) (.09 L)

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3.3.5 Oil Pipe Replacement

Replace the oil pipe between oil tank and the joint every two (2) years.

NOTE: After replacing the oil pipe, make sure to discharge air in the pipe as much as possible, and then fill the fuel tank with gasoline mixed with 2-stroke engine oil at the ratio of 25 to 50 : 1.

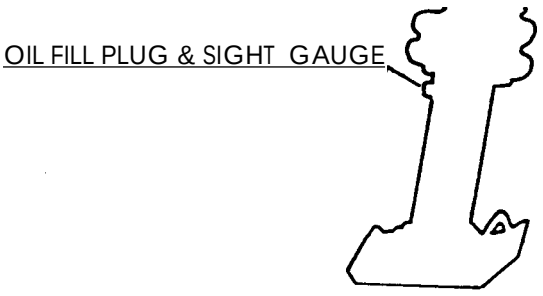
After running with the mixture of gasoline for enough time to discharge the air completely, refill the unleaded gasoline only for normal operation.

NOTE: The unit is equipped with a low oil shut-off sensor which is located inside the oil tank. When the oil level in the tank drops low enough to actuate the switch, the unit will shut off, even though there is still oil visible in the tank. The unit can not be restarted until the oil is replenished.

3.3.6 Lubrication

The oil level should be checked now and before first use of the Stomper. Thereafter, it should be checked every day as follows.

FOR XN, XT AND XM SERIES



1. With unit standing upright (in vertical position--not operating) so that the oil drains freely into the spring housing, check that the oil is at fill sight plug level.

2. Whenever the level is low, remove the fill sight plug and refill to level of fill sight plug with any good quality SAE-30.

NOTE: Use of a socket wrench is recommended to avoid damage to the sight gauge.

3. Change the oil every 300 operating hours or six months.

3.3.7 Air Cleaner

Engine life will be extended by maintaining clean engine air filters. Remove and clean the air filter elements daily, or more frequently under dustier job conditions. Wash the pre-filter element clean in a non-oily cleaning solvent such a "Solvesol". Let the filter dry before reinstalling it in the air cleaner.

Replace air cleaner element every 100 hours. (More frequently in dusty areas).

3.4 TO START MACHINE

1. Check fuel tank, oil tank, air cleaner and Stomper lubrication as previously instructed.

2. Open the fuel valve/shut-off switch on the lower right hand side of the engine and the air vent thumbscrew in the tank fill cap.

3. Raise throttle lever about halfway and apply the choke.

NOTE: A warm engine may not require choking.

4. Pull the starter briskly once or twice to prime the engine, then open choke slightly to prevent flooding and continue cranking as necessary to start.

5. When engine starts, set choke in the open or run position. Let the engine run at idle to warm up, then open up to full throttle for operation.

3.5 TO STOP MACHINE

1. Throttle engine down.

2. Close the fuel valve/shut-off switch and tank cap vent.

3.6 OPERATION OF MACHINE

⚠WARNING

WHEN OPERATING THE STOMPER, KEEP FEET CLEAR FROM THE RAMMING SHOE. SERIOUS PERSONAL INJURY MAY OCCUR. WHEN OPERATING THE STOMPER, HEARING PROTECTION SHOULD BE WORN. HEARING LOSS MAY RESULT FROM PROLONGED EXPOSURE TO NOISE.

CAUTION: Never operate on hard, unyielding surfaces. Unwarranteed damage may result.

CAUTION: Always use both hands when operating this machine. This will ensure safe machine operation.

1. In operation, guide the machine but let the machine do the work. Bearing down on the handle is unnecessary and limits the shoe jump.

2. On nearly level surfaces, the machine moves forward in rapid jumps. On uneven surfaces or inclines, rocking the handle slightly may assist the Stomper in moving forward.

3. Always guide the Stomper so that the whole shoe, and not just the front or back edge, does the impacting.

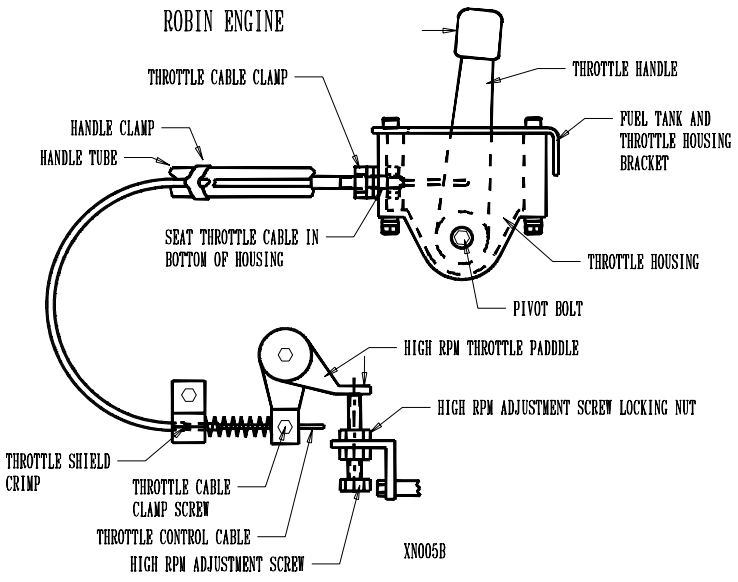
4. As the soil becomes compacted, the jump height of the Stomper will increase.

5. After a brief experience, you will know how to adapt the technique to the job conditions.

ROUTINE MAINTENANCE

3.7 THROTTLE CONTROL CABLE ADJUSTMENT

1. Loosen throttle cable clamp screw.
2. Push throttle handle all the way to the right.
3. Push down on high RPM throttle paddle until it rests on the high RPM adjustment screw and tighten throttle cable clamp screw.
4. Run machine and check engine RPM with a tachometer to see if it is running to specified RPM.



3.8 SETTING HIGH RPM (Operating Speed)

1. Loosen throttle control cable clamp screw and high RPM adjustment screw locking nut.
2. Turn high RPM adjustment screw counterclockwise to increase RPM or clockwise to decrease RPM, then tighten high RPM adjustment screw locking nut.
3. Push throttle handle all the way to the right.
4. Push down on the high RPM throttle paddle until is rests on the high RPM adjustment screw and tighten the throttle cable clamp screw.
5. Run machine and check engine RPM with a tachometer.

If engine is still not running to specified RPM, repeat above steps until recommended RPM is obtained.

3.9 THROTTLE HANDLE ADJUSTMENT

1. Retighten pivot bolt tight enough as to not allow throttle handle to move forward when machine is operating

3.10 IDLE SETTING

If the engine idles smoothly but at too high RPM, turn the idle stop screw counterclockwise a little at a time until the desired specification is obtained. To increase the idle speed, turn the idle stop screw slowly clockwise until the desired RPM is obtained. The idle stop screw is the black screw located behind the air cleaner base plate.

3.11 STORING STOMPERS

The following steps should be taken to prepare your Stomper for storage:

1. Disconnect fuel line and allow all fuel to drain from the gasoline tank only. Replace fuel line.

2. Start engine and allow to run until it stops from lack of fuel. This will use up all the fuel in the carburetor and prevent the formation of deposits due to evaporation of fuel.

⚠WARNING

GASOLINE IS BOTH TOXIC AND FLAMMABLE. DO NOT SMOKE WHILE WORKING WITH FUEL. DO NOT USE NEAR OPEN FLAME. AVOID PROLONGED BREATHING OF VAPORS AND SKIN CONTACT. FLASH POINT OF GASOLINE IS 40°F (4°C). SERIOUS ILLNESS OR LOSS OF LIFE COULD RESULT.

3. Close fuel valve/shut-off switch.

4. Remove spark plug and pour 60cc or 2 ounces (1/4 cup) of motor oil into the cylinder. Replace plug.

5. Crank the engine two or three times to distribute the oil throughout the cylinder. This will help prevent rusting during storage.

6. Store the unit in an upright position (as in the operating position) in a cool, dry, ventilated area.

4. OPERATIONS DIESEL

4.1 Specifications Stomper® Diesel

MODEL	STONE XD836Y
Dimensions	
Weight	215 lbs.
Dimensions (L x W x H)	31.5" x 15" x 38"
Shoe Size	13" x 13"
Operating System	
Power	4 hp. Yanmar
Engine Specs	L40AE-D
Engine RPM	3000 - 3600
Fuel Mixture	-
Fuel Tank Capacity	3 qts.
Fuel Tank Material	Polyethylene
Performance	
Impact Force	3650 lbs.
Max. Blows/ Min.	630 - 700
Max. Forward Travel Speed	40' - 50' / Min.
Max. Productivity	3200 Sq. Ft./Hr.
Max. Lift	22"
Max. Amplitude	Up to 3.0"
Options	-

*Soil Conditions can affect specifications.

OPERATING INSTRUCTIONS

4.2 OPERATING PRINCIPLE

A tamping shoe is mounted at the lower end of a cylindrical spring housing. A piston, installed between massive opposing springs inside the spring housing, is actuated by a connecting rod and crank system which is driven by a powerful air-cooled 4 hp diesel engine through a gear train and centrifugal clutch. The piston alternately loads and unloads the springs. This results in a rapid lifting up and ramming down action of the tamping shoe to compact the underlying material.

The Stomper is effective for compaction of a wide variety of job soil substances, particularly clay lumps, silt, loam and all granular materials. Although relatively light in weight and easy to operate, the Stomper delivers a tremendous impact to the soil.

These instructions contain information to guide you in efficient use and proper maintenance of the Stomper. To get long and trouble-free service from this power tool, periodic maintenance of the engine and machine is essential.

The Stomper is shipped completely assembled and only requires filling engine with diesel fuel and a brief check of lubricant levels in preparation for operation. You should first study these instructions.

4.3 PRE-OPERATION CHECKS

CAUTION: Sections on *Engine Maintenance, Lubrication and Air Cleaner* must be followed exactly. Failure to follow these instructions may void the warranty.

4.3.1 Engine Checks

DIESEL ENGINE: Diesel fuel is mandatory for use in this engine. Always use clean fuel. Low quality or contaminated fuel will damage fuel injection components.

⚠WARNING

DIESEL FUEL STORED IN GALVANIZED CONTAINERS REACTS CHEMICALLY WITH THE ZINC COATING ON THE CONTAINER. THE CHEMICAL REACTION CREATES POWDERY FLAKES OF ZINC SULFIDE. IF WATER IS PRESENT IN THE FUEL, A ZINC HYDROXIDE GEL WILL FORM.

Periodic checks and maintenance are required to keep your unit running properly.

- **Fuel** Use Diesel Fuel only. Strain the fuel through a fine meshed screen when filling fuel tank on engine to remove dirt if present.
- **Lube Oil** Check crankcase oil level daily. Fill to proper level with SAE 15W 40 CC/CD oil of API engine service application.
- **Replace Oil** Engine oil should be changed after first 20 hours then every 100 hours thereafter.
- **Adjustment** Check and tighten engine parts daily. Clean engine cooling fins daily. Check and adjust valves every 300 hours. Clearance to be set at 0.15 mm while engine is cold.

4.3.2 Starter Screen

This screen keeps dirt, etc., from entering the fan housing and clogging the air cooling passages. Because this engine is air-cooled, it is necessary to keep this screen clean at all times to permit the unrestricted passage of air into the fan housing.

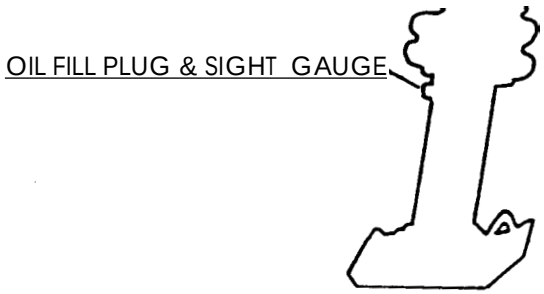
4.3.3 Fasteners

Check all nuts and bolts after 4 hours, then every day of operation. See parts lists for recommended torque values.

4.3.4 Lubrication

The oil level should be checked now and before first use of the Stomper. Thereafter, it should be checked every day as follows.

FOR XD MODEL



1. With unit standing upright (in vertical position--not operating) so that the oil drains freely into the spring housing, check that the oil is at fill sight plug level.

2. Whenever the level is low, remove the fill sight plug and refill to level of fill sight plug with any good quality SAE-30 engine oil.

NOTE: Use of a socket wrench is recommended to avoid damage to the sight gauge.

3. Change the oil every 300 operating hours or six months.

4.3.5 Air Cleaner

Engine life will be extended by maintaining a clean engine air filter. Remove and clean the air filter element daily or more frequently under dustier job conditions. Wash the pre-filter element clean in a non-oily cleaning solvent such as "Solvesol". Let the filter dry before reinstalling it in the air cleaner.

Replace air cleaner element every 100 hours. (More frequently in dusty areas).

4.4 TO START MACHINE

1. Check fuel tank, engine oil, air cleaner and Stomper lubrication as previously instructed.

CAUTION: Never use ether or other starting fluids to start the diesel engine. Engine failure will result.

2. Open the fuel valve under the tank and the air vent thumbscrew in the tank fill cap.

3. Raise throttle lever about 3/4 throttle.

4. Pull starting handle slowly until you feel resistance.

5. Return starting handle slowly.

6. Push decompression lever down and release. Lever should stay in down position.

7. Pull starting handle hard and fast.

8. If engine fails to start, try again from step 4.

4.5 TO STOP MACHINE

1. Throttle engine down and let run at idle for about 3 minutes.

2. Return throttle to stop position.

3. Close the fuel valve and tank cap vent.

4.6 OPERATION OF MACHINE

⚠WARNING

WHEN OPERATING THE STOMPER, KEEP FEET CLEAR FROM THE RAMMING SHOE. SERIOUS PERSONAL INJURY MAY OCCUR.
WHEN OPERATING THE STOMPER, HEARING PROTECTION SHOULD BE WORN. HEARING LOSS MAY RESULT FROM PROLONGED EXPOSURE TO NOISE.

CAUTION: Never operate on hard, unyielding surfaces. Unwarranteed damage may result.

CAUTION: Always use both hands when operating this machine. This will ensure safe machine operation.

1. In operation, guide the machine but let the machine do the work. Bearing down on the handle is unnecessary and limits the shoe jump.

2. On nearly level surfaces, the machine moves forward in rapid jumps. On uneven surfaces or inclines, rocking the handle slightly may assist the Stomper in moving forward.

3. Always guide the Stomper so that the whole shoe, and not just the front or back edge, does the impacting.

4. As the soil becomes compacted, the jump height of the Stomper will increase.

5. After a brief experience, you will know how to adapt the technique to the job conditions.

4.7 LIFTING and TRANSPORTING

Lifting

- To lift Stomper, use only suitable lifting device.
- Secure lifting device to central lift point on handles.

Transporting

- Lay unit down on its front side.
- Tie down Stomper securely to prevent slipping and breaking away while in transport.

⚠WARNING

DIESEL FUEL IS BOTH TOXIC AND FLAMMABLE. DO NOT SMOKE WHILE WORKING WITH FUEL. DO NOT USE NEAR OPEN FLAME. AVOID PROLONGED BREATHING OF VAPORS AND SKIN CONTACT. FLASH POINT OF FUEL NO. 2-D IS 125°F (52°C). SERIOUS ILLNESS OR LOSS OF LIFE COULD RESULT.

4.8 ENGINE IDLE

To adjust engine idle, it is necessary to use a strobe light with a digital readout for RPM's. Engine speed should be set at 3100 RPM ± 50 RPM.

Another way to set engine idle is to use the strobe light on ramming shoe. Shoe should run at about 620 blows per minute.

4.8.1 Fuel System

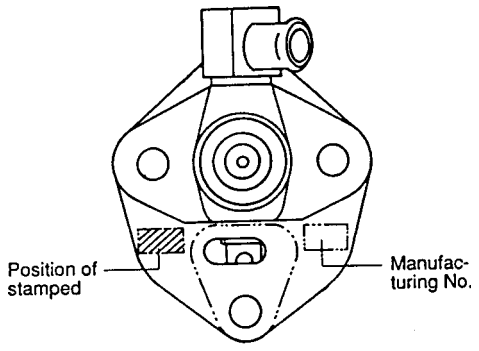
Fuel Injection Pump Specifications
Model: YPFE-M

Item		Model L40AE
Stamped Mark	Bare Engine	40S
	Generator Set	40D

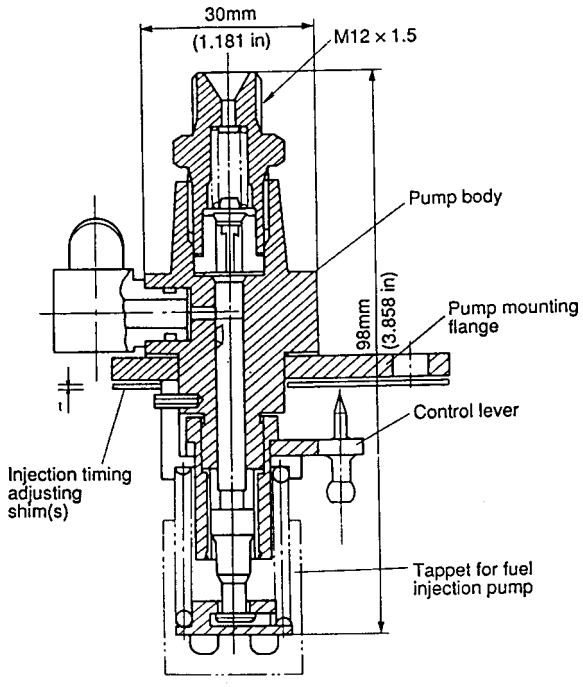
CAUTION:

1. The ID marks for the pumps are on the pump-mounting flange.
2. Fuel injection pumps are not interchangeable.
3. The fuel injection pump for discrete engine differs from the generator in the direction of the fuel inlet pipe.

	L40AE–L100AE
Adjusting Shims Standard thickness (shop assembly)	0.5 (0.0197)



Fuel pump mounting flange



(Configuration of fuel oil pump)

4.9 Disassembly and Reassembly - Fuel Injection Pump

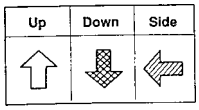
This is a standard fuel injection pump body. Disassemble and reassemble the fuel pump in the direction order of "UP", "DOWN" and "SIDE" from the center of the fuel injection pump body (marked "C") as illustrated. Reassemble the gasket A and B for the delivery seat in the position at the time of disassembly.

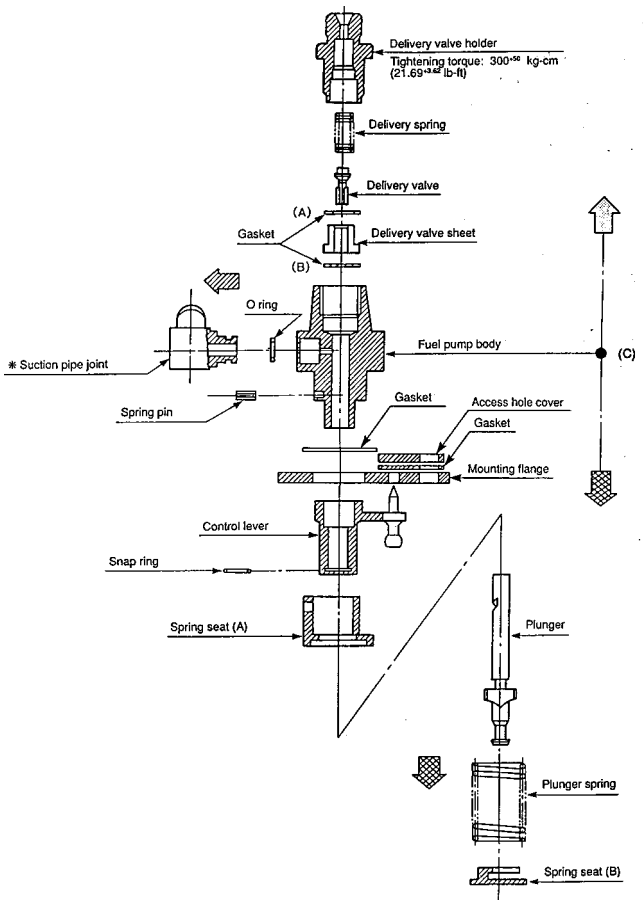
NOTE:

See the position of mark*.

Never remove the suction pipe joint from the pump body during routine disassembly.

Symbols;
Directions of disassembly from the center of fuel pump body (C).





4.10 Fuel Injection Valve

Specifications Model: YDLLA-P

Fuel Injection Valve Specifications

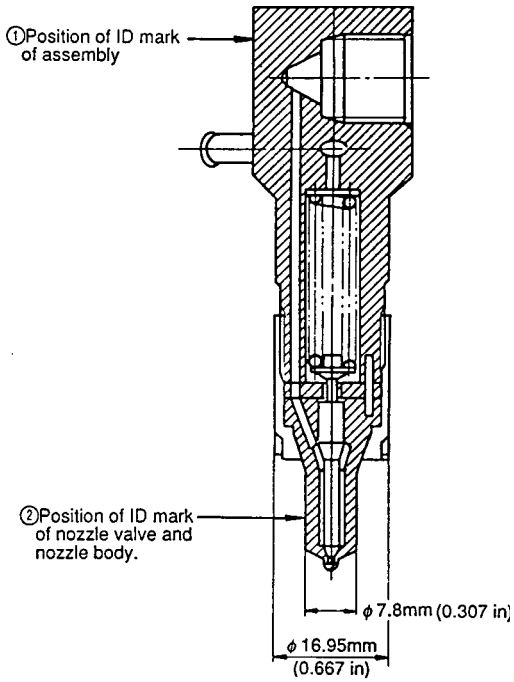
Item \ Specification	L40AE/48AE
Mark to identify assembly ①	AB
Mark to identify nozzle valve and nozzle body ②	YANMAR 150P 224A1

Example:
Symbol 150P indicates an injection angle of 150°; symbol 224A1 implies 4 nozzle holes which are 0.22mm in injection hole diameter.

CAUTION:

1. When replacing fuel injection valve, be sure to check engine model against the identity marks shown above. Any injection valve is least identifiable in appearance.

2. When removing the fuel injection valve, wrap it in cloth to protect the nozzle tip (injection port). Do not place the nozzle tip directly on the ground.



(Structure of injection valve)

Check

1. Carbon deposits (Flowering)—carbon deposits build up on the nozzle in the form of flowers. Flowering lowers combustion performance significantly. Make sure the nozzle is free from contamination.

2. Shape of injection spray—move the lever of the nozzle tester at a speed of approximately 1.2 time/sec. to check the spray pattern.

Normal shape of spray

1. The spray should all be at the same angle (from all four injection ports).

2. The spray should be a fine mist.

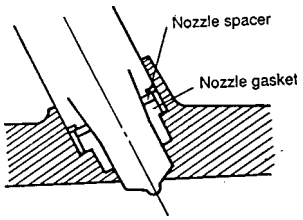
3. The spray should be smooth and steady without deviations (4 nozzles).

CAUTION: When installing fuel injection valve:

1. Tighten the fuel injection valve assembly to the specified torque.

2. Clean the sleeve surface. Be sure to replace the nozzle gasket at the same time.

NOTE:
If nozzle gasket stays in cylinder head after injection valve assembly has been removed from cylinder head, screw M8 or M9 stud bolt (more than 100mm long) in nozzle gasket, then pull out stud bolts to remove gasket.



Tightening Torque kg-cm (lb-ft)

Item \ Model	L40AE~L100AE
Installing fuel injection valve nut	100–120 (7.2–8.7)
Fuel injection nozzle case nut	400–450 (28.9–32.5)

4.11 Disassembly and Reassembly - Case Nut

Remove the case nut and then all parts of the valve can be disassembled.

To disassemble and reassemble the case nut, use a 15mm deep socket wrench. The fuel valve positioning pin does not need to be removed in most cases.

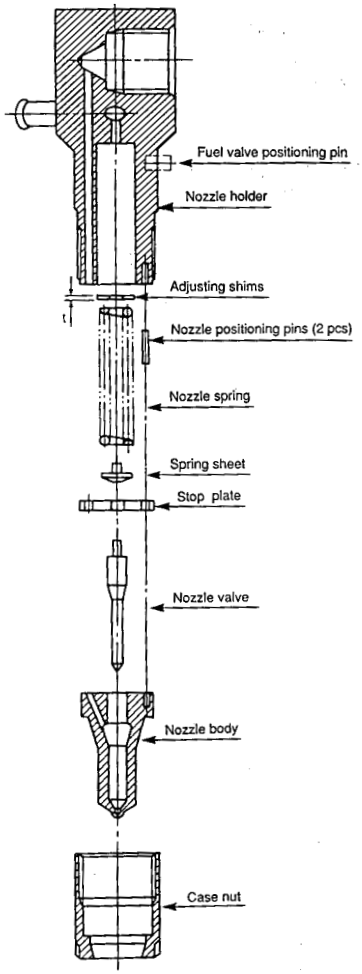
4.11.1 Adjustment

The injection starting pressure is 200 kg. To adjust the nozzle injection starting pressure, remove the nozzle holder and increase or decrease the number of adjusting shims.

mm (in)

	L40AE–L100AE
Adjusting shim standard thickness	0.60–0.65 (0.0236–0.0256)

Adjustment by 0.1mm results in a change in the injection starting pressure of about 20 kg/cm^2.
Adjusting shims come in the following thicknesses: 0.1, 0.15, 0.4, 0.5, 0.6, 0.7, and 0.8mm.



(Fuel injection valve assembly)

4.12 Fuel Filter

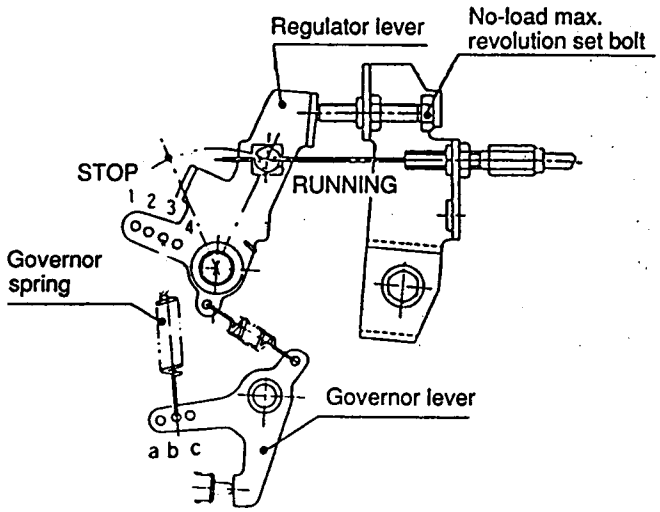
The fuel filter uses an element of nominal filterable particle diameter of 5 microns. During the periodical inspection of this part, check the element for break, separation from the frame to which it should be bonded, stoppage, etc., and if a defection is found, replace it with new one. To detach the fuel filter, first remove the filter cap on fuel tank, then pull out if from the fuel filler port. But pull the filter downwards for YDG (generator set), YLP and YDP (pump set).

4.13 Speed Control Device

The position where governor spring must be installed differs depending on engine model and its rated rpm as shown in the following table and illustration.

Check the spring for position before ascertaining the fuel injection limit.

Factory setting has governor spring installation in holes 2 and B. See following Diagram.



Position of Governor Spring Hole

Model and Application / Type of speed control device	Location of governor spring installation	
	L40AE~L70AE	
	3600 rpm (60 Hz)	3000 rpm (50 Hz)
A Speed variable, regulator handle revolution/ fixed type (remote controllable)	2 – b	2 – c
B Remote control type		
C Speed variable, (friction plate type)	1 – b	1 – c
D Constant revolution, lock lever type	1 – b	2 – c

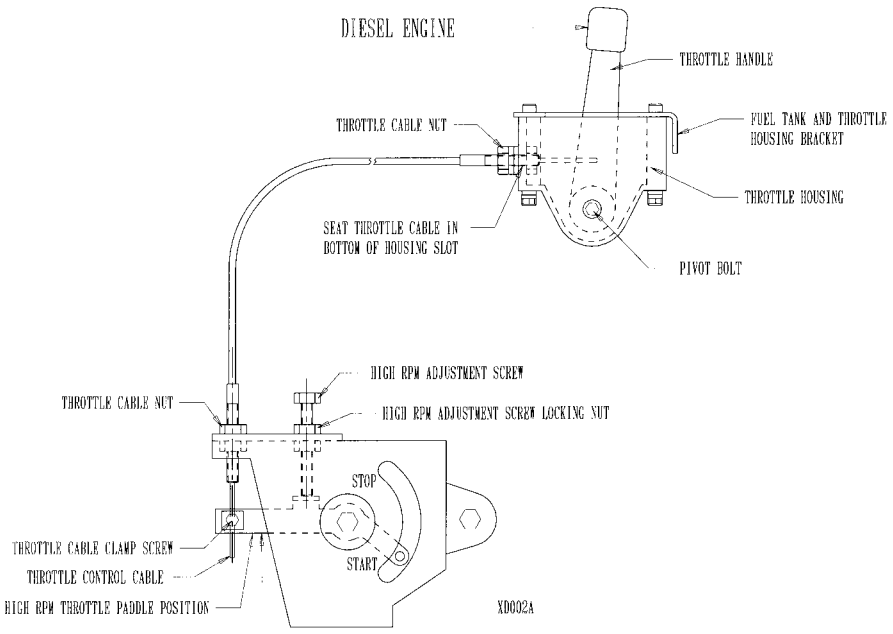
4.14 THROTTLE CONTROL CABLE ADJUSTMENT

1. Loosen throttle cable clamp screw.

2. Push throttle handle all the way to the right.

3. Push up on high RPM throttle paddle until it rests on the high RPM adjustment screw and tighten throttle cable clamp screw.

4. Run machine and check engine RPM with a tachometer to see if it is running to specified RPM.



4.15 SETTING HIGH RPM (Operating Speed)

1. Loosen throttle control cable clamp screw and high RPM adjustment screw locking nut.

2. Turn high RPM adjustment screw clockwise to increase RPM or counterclockwise to decrease RPM, then tighten high RPM adjustment screw locking nut.

3. Push throttle handle all the way to the right.

4. Push up on the high RPM throttle paddle until is rests on the high RPM adjustment screw and tighten the throttle cable clamp screw.

5. Run machine and check engine RPM with a tachometer.

If engine is still not running to specified RPM, repeat above steps until recommended RPM is obtained.

4.16 THROTTLE HANDLE ADJUSTMENT

1. Retighten pivot bolt tight enough as to not allow throttle handle to move forward when machine is operating

4.17 STORING STOMPERS

The following steps should be taken to prepare your Stomper for storage:

1. Operate engine for about three (3) minutes.

2. Stop engine. Drain lube oil and fill with clean oil.

3. Push decompression lever down and hold it while you pull recoil 2 or 3 times. (Do not start engine).

4 Pull decompression lever up and pull recoil slowly until you feel resistance. This will close intake and exhaust valves in compression position and help prevent rust from forming.

5. Disconnect fuel line and permit all fuel to drain from the fuel tank. Replace fuel lines.

6. Crank the engine two or three times to distribute the oil throughout the cylinder. This will help prevent rusting during storage.

7. Store the unit in an upright position (as in the operating position) in a cool, dry, ventilated area.

5. OPERATIONS
2-CYCLE PRE-MIX

5.1 Specifications Stomper® Pre-Mix

MODEL	STONE XN650	STONE XT728R	STONE XM832
Dimensions			
Weight	125 lbs.	130 lbs.	158 lbs.
Dimensions (L x W x H)	30.3" x 13.5" x 36.5"	28.5" x 15" x 38"	28.5" x 15" x 38"
Shoe Size	10" x 13"	11" x 13"	11" x 13"
Operating System			
Power	4 hp. Robin	4 hp. Robin	4 hp. Robin
Engine Specs	EC12D	EC12D	EC12D
Engine RPM	4300	4300	3900
Fuel Mixture	50:1	50:1	50:1
Fuel Tank Capacity	3 qts.	3 qts.	3 qts.
Fuel Tank Material	Polyethylene	Polyethylene	Polyethylene
Performance			
Impact Force	2600 lbs.	2800 lbs.	3200 lbs.
Max. Blows/ Min.	780	700	660
Max. Forward Travel Speed	60' - 70' / Min.	60' - 90' / Min.	50' - 64' / Min.
Max. Productivity	3500 Sq. Ft./Hr.	4950 Sq. Ft./Hr.	3500 Sq. Ft./Hr.
Max. Lift	18"	18"	22"
Max. Amplitude	2.5"	Up to 4"	Up to 3"
Options	Extension	Extension	–

*Soil conditions can affect specifications.

OPERATING INSTRUCTIONS

5.2 OPERATING PRINCIPLE

A tamping shoe is mounted at the lower end of a cylindrical spring housing. A piston, installed between massive opposing springs inside the spring housing, is actuated by a connecting rod and crank system which is driven by a high speed, 2 cycle gasoline engine through a gear train and centrifugal clutch. The piston alternately loads and unloads the springs. This results in a rapid lifting up and ramming down action of the tamping shoe to compact the underlying material.

The Stomper is effective for compaction of a wide variety of job soil substances, particularly clay lumps, silt, loam and all granular materials. Although relatively light in weight and easy to operate, the Stomper delivers a tremendous impact to the soil.

These instructions contain information to guide you in efficient use and proper maintenance of the Stomper. To get long and trouble-free service from this power tool, periodic maintenance of the engine and machine is essential.

The Stomper is shipped completely assembled and only requires filling with 2 cycle fuel mixture and a brief check of lubricant levels in preparation for operation. You should first study these instructions.

5.3 PRE-OPERATION CHECKS

CAUTION: Sections on fuel mixture, air cleaner, and lubrication must be followed exactly. Failure to follow these instructions may void the warranty.

5.3.1 Spark Plug

Check and clean spark plugs regularly. A fouled, dirty, or carboned spark plug causes hard starting and poor engine performance. Set spark plug gap as per specifications. See Engine Manual.

5.3.2 Starter Screen

This screen keeps dirt, etc., from entering the fan housing and clogging the air cooling passages. Because this engine is air-cooled, it is necessary to keep this screen clean at all times to permit the unrestricted passage of air into the fan housing.

5.3.3 Fasteners

Check all nuts and bolts after 4 hours, then every day of operation. See parts lists for recommended torque values.

5.3.4 Fuel Mixture

Use recommended fuel mixtures. To get this ratio, thoroughly mix the following quantities of gas and oil in a clean safety container:

Use regular unleaded gasoline. High test is not recommended.

Strain the fuel mixture through a fine meshed screen when filling gasoline tank on engine to remove dirt if present.

NOTE: **Special ratio for initial break-in period. See chart below**

FUEL Gasoline	50:1 EC12 Two Cycle Oil	20:1 All Units Break-In Two Cycle Oil Mix (first 10 hours)
5 Gallons	.80 pints (12.8 oz) (.38 L)	2.00 pints (32 oz) (.94 L)
1 Gallons	.16 pints (2.56 oz) (..08 L)	.40 pints (6.4 oz) (.19 L)
2 Quarts	.08 pints (1.28 oz) (..04 L)	.20 pints (3.2 oz) (.09 L)

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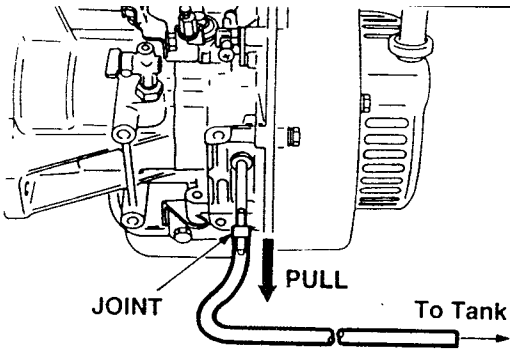
5.3.5 Oil Pipe Replacement



Replace the oil pipe between oil tank and the joint every two (2) years.

NOTE: After replacing the oil pipe, make sure to discharge air in the pipe as much as possible, and then fill the fuel tank with gasoline mixed with 2-stroke engine oil at the ratio of 25 to 50 : 1.

After running with the mixture of gasoline for enough time to discharge the air completely, refill the unleaded gasoline only for normal operation.

5.3.6 Lubrication

The oil level should be checked now, and before first use of the Stomper. Thereafter, it should be checked every day as follows.

FOR XN, XT AND XM SERIES

1. With unit standing upright (in vertical position - not operating) so that the oil drains freely into the spring housing, check that the oil is at fill sight plug level.

2. Whenever the level is low, remove the fill sight plug and refill to level of fill sight plug with any good quality SAE-30. Use of a socket wrench is recommended to avoid damage to the sight gauge.

3. Change the oil every 300 operating hours or six months.

5.3.7 Air Cleaner

Engine life will be extended by maintaining a clean engine air filter. Remove and clean the air filter element daily, or more frequently under dustier job conditions. Wash the pre-filter element clean in a non-oily cleaning solvent such a "Solvesol". Let the filter dry before reinstalling in the air cleaner.

Replace air cleaner element every 100 hours. (More frequently in dusty areas).

5.4 TO START MACHINE

1. Check fuel tank, air cleaner, and Stomper lubrication as previously instructed.

2. Open the fuel valve under the tank and the air vent thumbscrew in the tank fill cap.

3. Raise throttle lever halfway and apply the choke.

NOTE: A warm engine may not require choking.

4. Pull the starter briskly once or twice to prime the engine, then open choke slightly to prevent flooding and continue cranking as necessary to start.

5. When engine starts, set choke in the open or run position. Let the engine run at idle to warm up, then open up to full throttle for operation.

5.5 TO STOP MACHINE

1. Throttle engine down.

2. Close the fuel valve shut-off switch.

5.6 OPERATION OF MACHINE

⚠WARNING

WHEN OPERATING THE STOMPER, KEEP FEET CLEAR FROM THE RAMMING SHOE. SERIOUS PERSONAL INJURY MAY OCCUR.
WHEN OPERATING THE STOMPER, HEARING PROTECTION SHOULD BE WORN. HEARING LOSS MAY RESULT FROM PROLONGED EXPOSURE TO NOISE.

CAUTION: Never operate on hard, unyielding surfaces. Unwarranteed damage may result.

CAUTION: Always use both hands when operating this machine. This will ensure safe machine operation.

1. In operation, guide the machine but let the machine do the work. Bearing down on the handle is unnecessary and limits the shoe jump.

2. On nearly level surfaces, the machine moves forward in rapid jumps. On uneven surfaces or inclines, rocking the handle slightly may assist the Stomper in moving forward.

3. Always guide the Stomper so that the whole shoe, and not just the front or back edge, does the impacting.

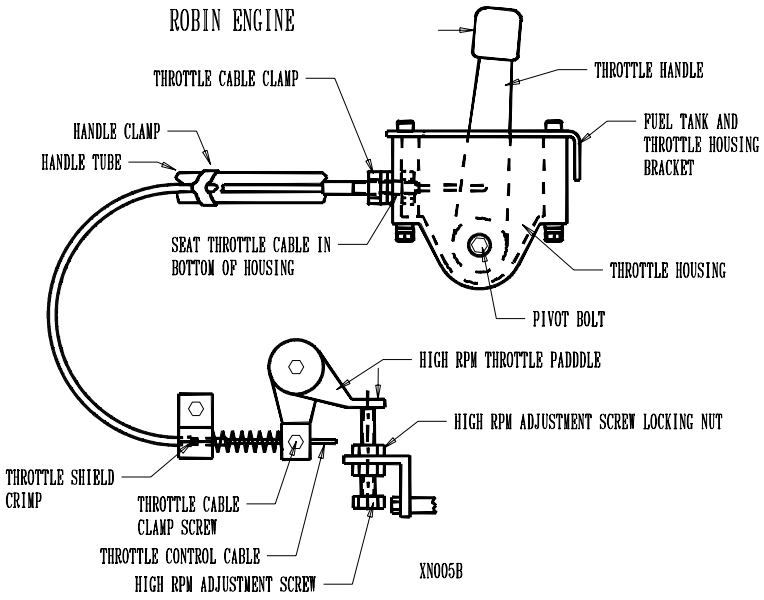
4. As the soil becomes compacted, the jump height of the Stomper will increase.

5. After a brief experience, you will know how to adapt the technique to the job conditions.

ROUTINE MAINTENANCE

5.7 THROTTLE CONTROL CABLE ADJUSTMENT

1. Loosen throttle cable clamp screw.
2. Push throttle handle all the way to the right.
3. Push down on high RPM throttle paddle until it rests on the high RPM adjustment screw and tighten throttle cable clamp screw.
4. Run machine and check engine RPM with a tachometer to see if it is running to specified RPM.



5.8 SETTING HIGH RPM (Operating Speed)

1. Loosen throttle control cable clamp screw and high RPM adjustment screw locking nut.
2. Turn high RPM adjustment screw counterclockwise to increase RPM or clockwise to decrease RPM, then tighten high RPM adjustment screw locking nut.
3. Push throttle handle all the way to the right.
4. Push down on the high RPM throttle paddle until is rests on the high RPM adjustment screw and tighten the throttle cable clamp screw.
5. Run machine and check engine RPM with a tachometer.

If engine is still not running to specified RPM, repeat above steps until recommended RPM is obtained.

5.9 THROTTLE HANDLE ADJUSTMENT

1. Retighten pivot bolt tight enough as to not allow throttle handle to move forward when machine is operating.

5.10 IDLE SETTING

If the engine idles smoothly but at too high RPM, turn the idle stop screw counterclockwise a little at a time until the desired specification is obtained. To increase the idle speed, turn the idle stop screw slowly clockwise until the desired RPM is obtained. The idle stop screw is the black screw located behind the air cleaner base plate.

5.11 STORING STOMPERS

The following steps should be taken to prepare your Stomper for storage:

1. Close fuel shut-off valve.

2. Start engine and allow to run until it stops from lack of fuel. This will use up all the fuel in the carburetor and prevent the formation of deposits due to evaporation of fuel.

⚠WARNING

GASOLINE IS BOTH TOXIC AND FLAMMABLE. DO NOT SMOKE WHILE WORKING WITH FUEL. DO NOT USE NEAR OPEN FLAME. AVOID PROLONGED BREATHING OF VAPORS AND SKIN CONTACT. FLASH POINT OF GASOLINE IS 40°F (4°C). SERIOUS ILLNESS OR LOSS OF LIFE COULD RESULT.

3. Disconnect fuel line and permit all fuel to drain from the fuel tank. Replace fuel lines.

4. Remove spark plug and pour 60cc or 2 ounces (1/4 cup) of motor oil into the cylinder. Replace plug.

5. Crank the engine two or three times to distribute the oil throughout the cylinder. This will help prevent rusting during storage.

6. Store the unit in an upright position (as in the operating position) in a cool, dry, ventilated area.

6. OPERATIONS 4-CYCLE GASOLINE

MODEL	STONE XJ834 HG
Dimensions	
Weight	200 lbs.
Dimensions (L x W x H)	33.5" x 16.5" x 38.5"
Shoe Size	13" x 13"
Operating System	
Power	4 hp. Honda
Engine Specs	GX120
Engine RPM	3050 -3250
Fuel Mixture	-
Fuel Tank Capacity	3 qts.
Fuel Tank Material	Polyethylene
Performance	
Impact Force	3400 lbs.
Max. Blows/ Min.	630 - 700
Max. Forward Travel Speed	40' - 50' / Min.
Max. Productivity	Up to 3200 Sq. Ft. / Hr.
Max. Lift	22"
Max. Amplitude	2" - 3"
Options	-

*Soil Conditions can affect specifications.

OPERATING INSTRUCTIONS

6.2 OPERATING PRINCIPLE

A tamping shoe is mounted at the lower end of a cylindrical spring housing. A piston, installed between massive opposing springs inside the spring housing, is actuated by a connecting rod and crank system which is driven by a high speed, 4 cycle gasoline engine through a gear train and centrifugal clutch. The piston alternately loads and unloads the springs. This results in a rapid lifting up and ramming down action of the tamping shoe to compact the underlying material.

The Stomper is effective for compaction of a wide variety of job soil substances, particularly clay lumps, silt, loam and all granular materials. Although relatively light in weight and easy to operate, the Stomper delivers a tremendous impact to the soil.

These instructions contain information to guide you in efficient use and proper maintenance of the Stomper. To get long and trouble-free service from this power tool, periodic maintenance of the engine and machine is essential.

The Stomper is shipped completely assembled and only requires filling 4 cycle engine with oil, fuel and a brief check of lubricant levels in preparation for operation. You should first study these instructions.

6.3 PRE-OPERATION CHECKS

CAUTION: Sections on fuel mixture, air cleaner, and lubrication must be followed exactly. Failure to follow these instructions may void the warranty.

6.3.1 Spark Plug

Check and clean spark plugs regularly. A fouled, dirty, or carboned spark plug causes hard starting and poor engine performance. Set spark plug gap as per specifications. See Engine Manual.

6.3.2 Starter Screen

This screen keeps dirt, etc. from entering the fan housing and clogging the air cooling passages. Because this engine is air-cooled, it is necessary to keep this screen clean at all times to permit the unrestricted passage of air into the fan housing.

6.3.3 Fasteners

Check all nuts and bolts after 4 hours, then every day of operation. See parts lists for recommended torque values.

6.3.4 Fuel Mixture

Use regular unleaded gasoline. High test is not recommended.

Strain the fuel through a fine meshed screen when filling gasoline tank on engine to remove dirt if present.

6.3.5 Lubrication

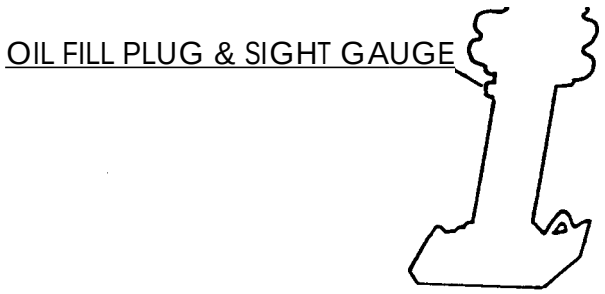
The oil level should be checked now, and before first use of the Stomper. Thereafter, it should be checked every day as follows.

FOR XJ MODEL

1. With unit standing upright (in vertical position--not operating) so that the oil drains freely into the spring housing, check that the oil is at fill sight plug level.

2. Whenever the level is low, remove the fill sight plug and refill to level of fill sight plug with any good quality SAE-30. Use of a socket wrench is recommended to avoid damage to the sight gauge.

3. Change the oil every 300 operating hours or six months.



6.3.6 Air Cleaner

Engine life will be extended by maintaining a clean engine air filter. Remove and clean the air filter element every 50 hours, or more frequently under dustier job conditions.

1. Foam element: Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly. Soak the element in clean engine oil and squeeze out the excess oil. The engine will smoke during initial start-up if too much oil is left in the foam.

2. Paper element: Tap the element lightly several times on a hard surface to remove excess dirt, or blow compressed air (not exceeding 30psi [207 kPa]) through the filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the fibers. Replace the paper element if it is excessively dirty.

3. Wipe dirt from the air cleaner case and cover. Be careful to prevent dirt from entering the air duct that leads to the carburetor.

Replace air cleaner element every 100 hours. (More frequently in dusty areas).

6.4 TO START MACHINE

1. Check fuel tank, air cleaner, and Stomper lubrication as previously instructed.

2. Open the fuel valve under the tank and the air vent thumbscrew in the tank fill cap.

3. Turn the ON/OFF switch to ON.

4. Raise throttle lever halfway and apply the choke.

NOTE: A warm engine may not require choking.

5. When engine starts, set choke in the open or run position. Let the engine run at idle to warm up, then open up to full throttle for operation.

6.5 TO STOP MACHINE

1. Throttle engine down.

2. Turn the ON/OFF switch to OFF.

6.6 OPERATION OF MACHINE

⚠WARNING

WHEN OPERATING THE STOMPER, KEEP FEET CLEAR FROM THE RAMMING SHOE. SERIOUS PERSONAL INJURY MAY OCCUR.

WHEN OPERATING THE STOMPER, HEARING PROTECTION SHOULD BE WORN. HEARING LOSS MAY RESULT FROM PROLONGED EXPOSURE TO NOISE.

CAUTION: Never operate on hard, unyielding surfaces. Unwarranteed damage may result.

CAUTION: Always use both hands when operating this machine. This will ensure safe machine operation.

1. In operation, guide the machine but let the machine do the work. Bearing down on the handle is unnecessary and limits the shoe jump.

2. On nearly level surfaces, the machine moves forward in rapid jumps. On uneven surfaces or inclines, rocking the handle slightly may assist the Stomper in moving forward.

3. Always guide the Stomper so that the whole shoe, and not just the front or back edge, does the impacting.

4. As the soil becomes compacted, the jump height of the Stomper will increase.

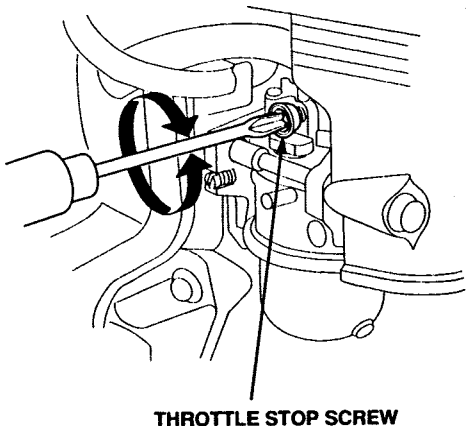
5. After a brief experience, you will know how to adapt the technique to the job conditions.

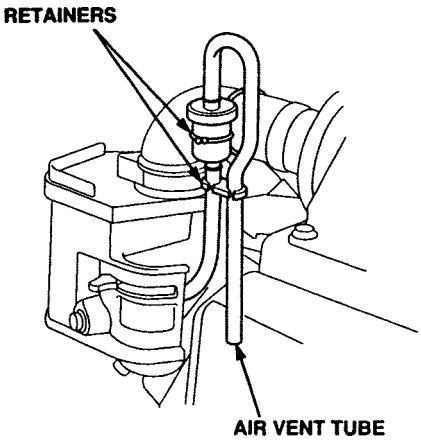
ROUTINE MAINTENANCE

6.7 IDLE SPEED ADJUSTMENT

Standard idle speed: 1,500 ± 50 rpm

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed.



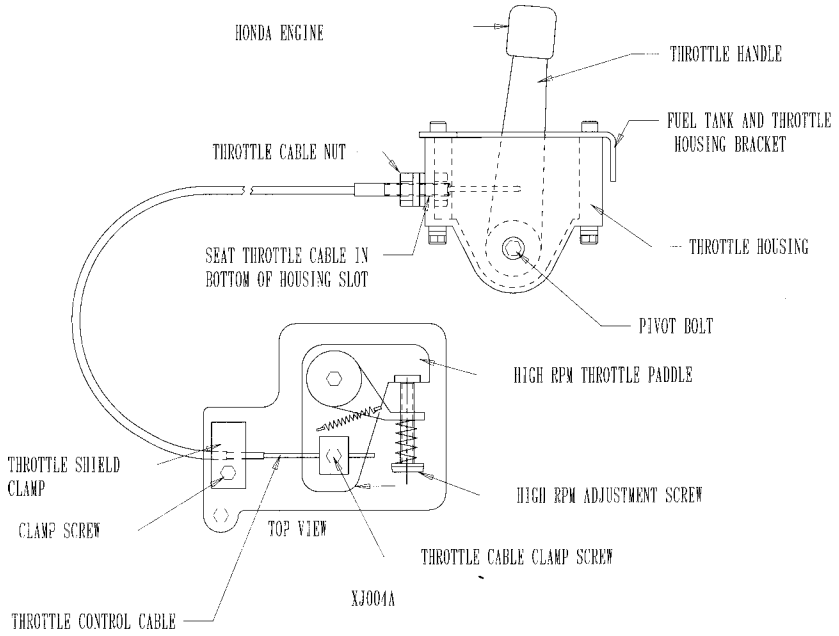


6.8 AIR VENT TUBE INSPECTION

Check that the air vent tube is secured by the tube retainers without collapsing or kinking.

6.9 THROTTLE CONTROL CABLE ADJUSTMENT

1. Loosen throttle cable clamp screw.
2. Push throttle handle all the way to the right.
3. Push the high RPM throttle paddle to the left until it rests on the high RPM adjustment screw and tighten throttle cable clamp screw.
4. Run machine and check engine RPM with a tachometer to see if it is running to specified RPM.



6.10 SETTING HIGH RPM (Operating Speed)

1. Loosen throttle control cable clamp screw.
2. Turn high RPM adjustment screw clockwise to increase RPM or counterclockwise to decrease RPM.
3. Push throttle handle all the way to the right.
4. Push the high RPM throttle paddle to the left until is rests on the high RPM adjustment screw and tighten the throttle cable clamp screw.
5. Run machine and check engine RPM with a tachometer.

If engine is still not running to specified RPM, repeat above steps until recommended RPM is obtained.

6.11 THROTTLE HANDLE ADJUSTMENT

1. Retighten pivot bolt tight enough as to not allow throttle handle to move forward when machine is operating

6.12 STORING STOMPERS

The following steps should be taken to prepare your Stomper for storage:

1. Close fuel shut-off valve.
2. Start engine and allow to run until it stops from lack of fuel. This will use up all the fuel in the carburetor and prevent the formation of deposits due to evaporation of fuel.

⚠WARNING

GASOLINE IS BOTH TOXIC AND FLAMMABLE. DO NOT SMOKE WHILE WORKING WITH FUEL. DO NOT USE NEAR OPEN FLAME. AVOID PROLONGED BREATHING OF VAPORS AND SKIN CONTACT. FLASH POINT OF GASOLINE IS 40°F (4°C). SERIOUS ILLNESS OR LOSS OF LIFE COULD RESULT.

3. Disconnect fuel line and permit all fuel to drain from the fuel tank. Replace fuel lines.
4. Remove spark plug and pour 60cc or 2 ounces (1/4 cup) of motor oil into the cylinder. Replace plug.
5. Crank the engine two or three times to distribute the oil throughout the cylinder. This will help prevent rusting during storage.
6. Store the unit in an upright position (as in the operating position) in a cool, dry, ventilated area.

7. MAINTENANCE

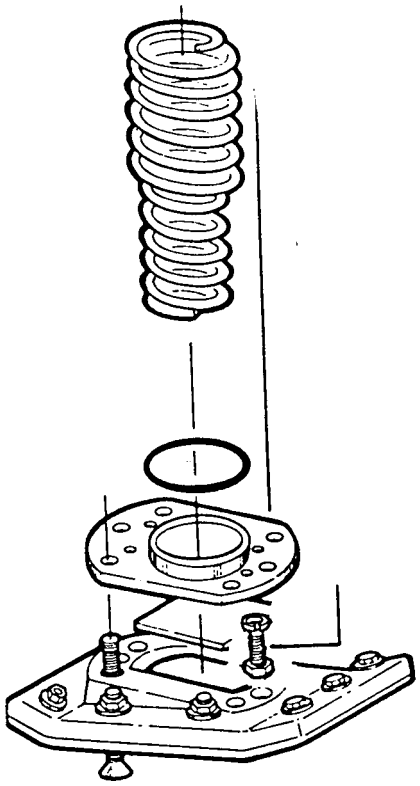
7.1 IMPORTANT

The person attempting *any* of the following maintenance tasks must be authorized to do so and have read *and* understood *all* sections within this manual.

7.2 INSTRUCTIONS FOR BASE PLATE REMOVAL

The spring retaining Base Plate retains heavy springs under compression. Follow the instructions carefully or severe personal injury may occur.

Detach shoe by removing six (6) shoe bolts and washers. Assemble two (2) threaded bolts, two (2) washers from bottom two corner bolt holes, fully thread two (2) nuts with two (2) washers from opposite side. WITH CAUTION, remove the four (4) sock head cap screws and then alternately back off the two thread rods approximately 1/2 inch at a time until all the spring tension is removed, then remove the threaded bolts and base plate to access springs.



ITEM	P/N	DESCRIPTION	QUANTITY
KIT	23011	Tool Kit, Base Plate Removal (includes all)	1
1.	43150	Full Thread Bolt M12 x 8"	2
2.	80896	NUTFX M12	2
3.	80807	WSHR M12 x 2400	4
4.	56230	Instructions Base Plate Removal	1

7.3 INSTRUCTIONS FOR SERVICE
LOWER UNIT XN OIL INJECTED AND PRE-MIX
STOMPER MODEL XN650

The spring retaining Base Plate retains heavy springs under compression. Follow the instructions carefully or severe personal injury may occur.

1. Detach the shoe from the stomper by removing (6) shoe bolts and washers.
2. Thread M8 nuts onto (2) full thread M8 x 5.50" bolts (provided in kit) 1.25" up from the bottom of the bolts (see Figure A).
3. Replace two bolts that are diagonal from each other on the bottom spring cover with assembled full thread bolts with nuts from Step 2. Make sure to thread the assembled bolts in a full 1.25" (see Figure B).
4. Remove the other (4) bolts from the bottom spring cover (leaving the full thread bolts in place).
5. Carefully back each nut off a .25" at a time on each side using two wrenches (one to hold the bolt in place and the other to back the nut off) until the spring tension is removed (see Figure C).
6. Then remove the full thread bolts and the bottom spring cover to access the springs.
7. Remove lower spring set.
8. Insert snubber puller, P/N 39539, under snubber (Item 14). Insert pry bar under snubber puller and pop loose snubber.
9. Using M24 deep socket, remove M16NY locknut from piston rod. Insert 5/8" or smaller rod through top of piston rod head to hold rod from turning to remove nut.
10. Piston puck and upper springs can now be accessed.
11. Reassemble in reverse order.

* Use red loctite 264 on shoe bolts only.

Figure A

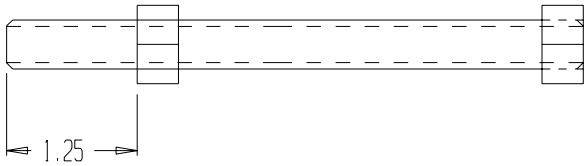


Figure B

Figure C

ITEM	P/N	DESCRIPTION	QUANTITY
KIT	23159	Kit Snubber Puller XN	1
1	56338	Instructions Lower Unit Service XN	1
2	50107	Weld Thread M8 x 5.50 in.	2
3	39539	Puller Snubber	1
4	80854	NUTFX M8-1/25	2

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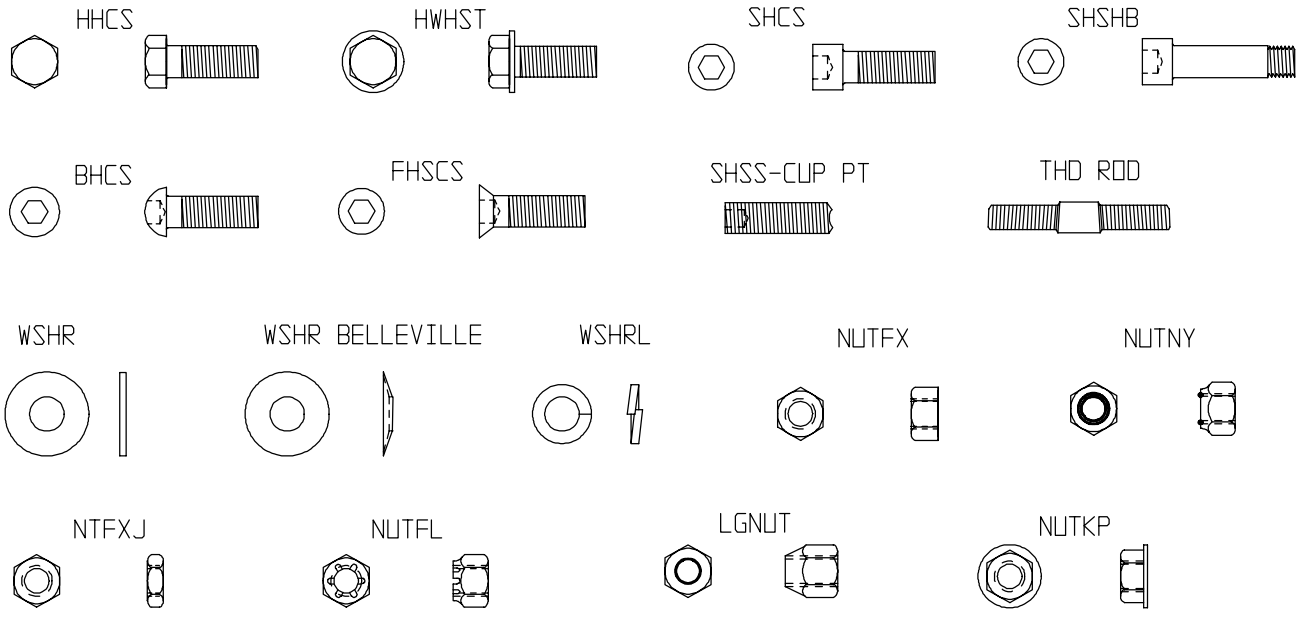
8.1 HARDWARE KEY



ZN = ZINC PLATED
BLK = BLACK OXIDE FINISH

VR005A

8.2 Torque Charts

SAE GRADE 5 Coarse Thread, Zinc-Plated		
SIZE	TORQUE	
	ft. lbs.	Nm
1/4 - 20 (.250)	6	8
5/16 - 18 (.3125)	13	18
3/8 - 16 (.375)	23	31
7/16 - 14 (.4375)	37	50
1/2 - 13 (.500)	57	77
9/16 - 12 (.5625)	82	111
5/8 - 11 (.625)	112	152
3/4 - 10 (.750)	200	271
7/8 - 9 (.875)	322	436.5
1 - 8 (1.000)	483	655

SAE GRADE 8 Coarse Thread, Zinc-Plated		
SIZE	TORQUE	
	ft. lbs.	Nm
1/4 - 20 (.250)	9	12
5/16 - 18 (.3125)	18	24
3/8 - 16 (.375)	33	45
7/16 - 14 (.4375)	52	70
1/2 - 13 (.500)	80	108
9/16 - 12 (.5625)	115	156
5/8 - 11 (.625)	159	215
3/4 - 10 (.750)	282	382
7/8 - 9 (.875)	454	615
1 - 8 (1.000)	682	925

SAE GRADE 5 Fine Thread, Zinc-Plated		
SIZE	TORQUE	
	ft. lbs.	Nm
1/4 - 28 (.250)	7	10
5/16 - 24 (.3125)	14	19
3/8 - 24 (.375)	26	35
7/16 - 20 (.4375)	41	56
1/2 - 20 (.500)	64	87
9/16 - 18 (.5625)	91	123
5/8 - 18 (.625)	128	173
3/4 - 16 (.750)	223	302
7/8 - 14 (.875)	355	481
1 - 12 (1.000)	529	717
1 -14 (1.000)	541	733

SAE GRADE 8 Fine Thread, Zinc-Plated		
SIZE	TORQUE	
	ft. lbs.	Nm
1/4 - 28 (.250)	10	14
5/16 - 24 (.3125)	20	27
3/8 - 24 (.375)	37	50
7/16 - 20 (.4375)	58	79
1/2 - 20 (.500)	90	122
9/16 - 18 (.5625)	129	175
5/8 - 18 (.625)	180	244
3/4 - 16 (.750)	315	427
7/8 - 9 (.875)	501	679
1 - 12 (1.000)	746	1011
1 -14 (1.000)	764	1036

8.2 Torque Charts

Property Class 8.8

ZINC-PLATED

SIZE	Coarse Thread		Fine Thread	
	Nm	ft. lbs.	Nm	ft. lbs.
M6	9.9	7	10	7
M8	24	18	25	18
M10	48	35	49	36
M12	83	61	88	65
M14	132	97	140	103
M16	200	148	210	155
M20	390	288	425	313
M24	675	498	720	531

Property Class 10.9

ZINC-PLATED

SIZE	Coarse Thread		Fine Thread	
	Nm	ft. lbs.	Nm	ft. lbs.
M6	14	10	14	10
M8	34	25	35	26
M10	67	49	68	50
M12	117	86	125	92
M14	185	136	192	142
M16	285	210	295	218
M20	550	406	600	443
M24	950	701	1000	738

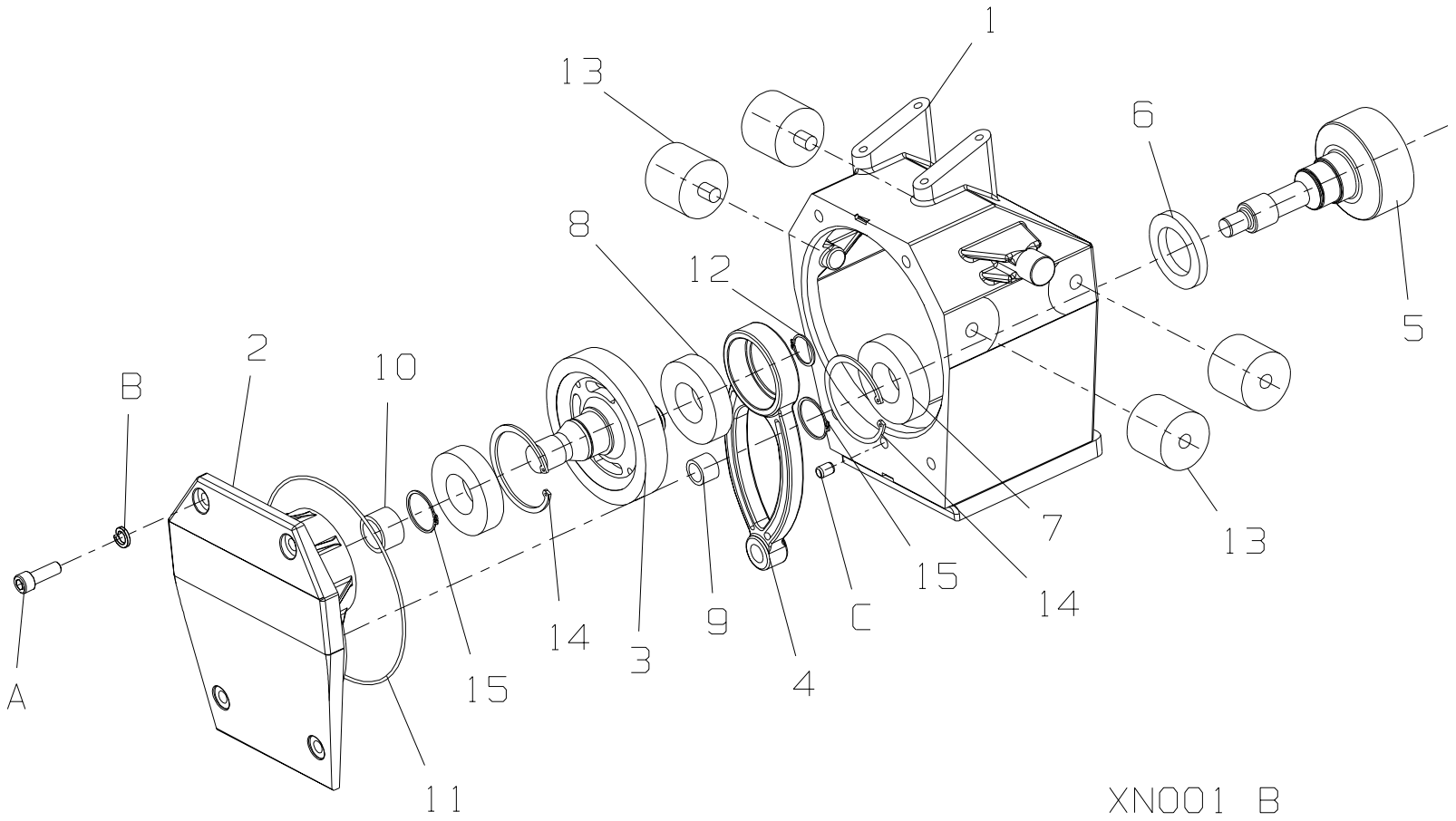
Property Class 12.9

ZINC-PLATED

SIZE	Coarse Thread		Fine Thread	
	Nm	ft. lbs.	Nm	ft. lbs.
M6	16.5	12	16.5	12
M8	40	30	42	31
M10	81	60	82	60
M12	140	103	150	111
M14	220	162	235	173
M16	340	251	350	258
M20	660	487	720	531
M24	1140	841	1200	885

Conversion Factor: 1 ft. lb. = 1.3558 Nm

8.3 Gearcase for XN Oil Injected and Pre-Mix



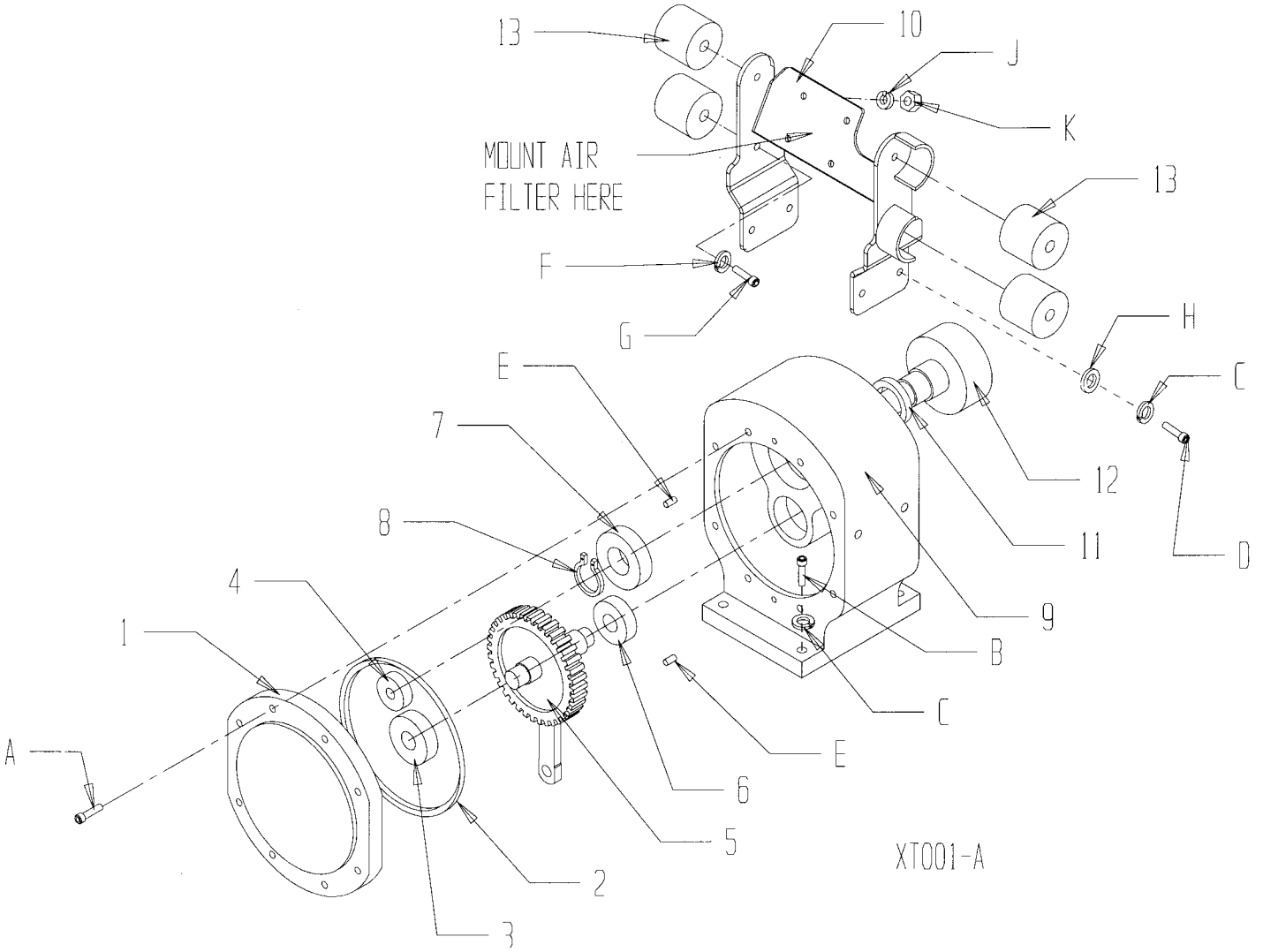
8.3 Gearcase for XN Oil Injected and Pre-Mix

Item	Part No.	Description	Qty.
1	39373	Gear Case, Machined	1
2	39376	Cover Front, Machined	1
3	39379	Gear Helical Crank	1
4	39380	Connecting Rod, Machined	1
5	39388	Pinion Helical	1
6	39435	Seal Shaft 1.563	1
7	39428	Bearing Ball	2
8	39429	Bearing Ball	1
9	39431	Bearing Needle	1
10	39430	Bearing Needle	1
11	39437	O-Ring 2.62MM x 177.47MM	1
12	39432	Ring External .984	1
13	39425	Shock Mount	4
14	39434	Ring Internal 2.812	2
15	39433	Ring External 1.375	2

Item	Part No.	Description	Qty.	DIN
A	80872	SHCS M10 - 1.5 x 30 8.8 ZN	4	912
B	80804	WSHRL M10 Split ZN	4	127B
C	80543	PINDL 3/8 OD x 1/2 LG	1	-

REMARK:

8.4 Gearcase for XT Oil Injected and Pre-Mix



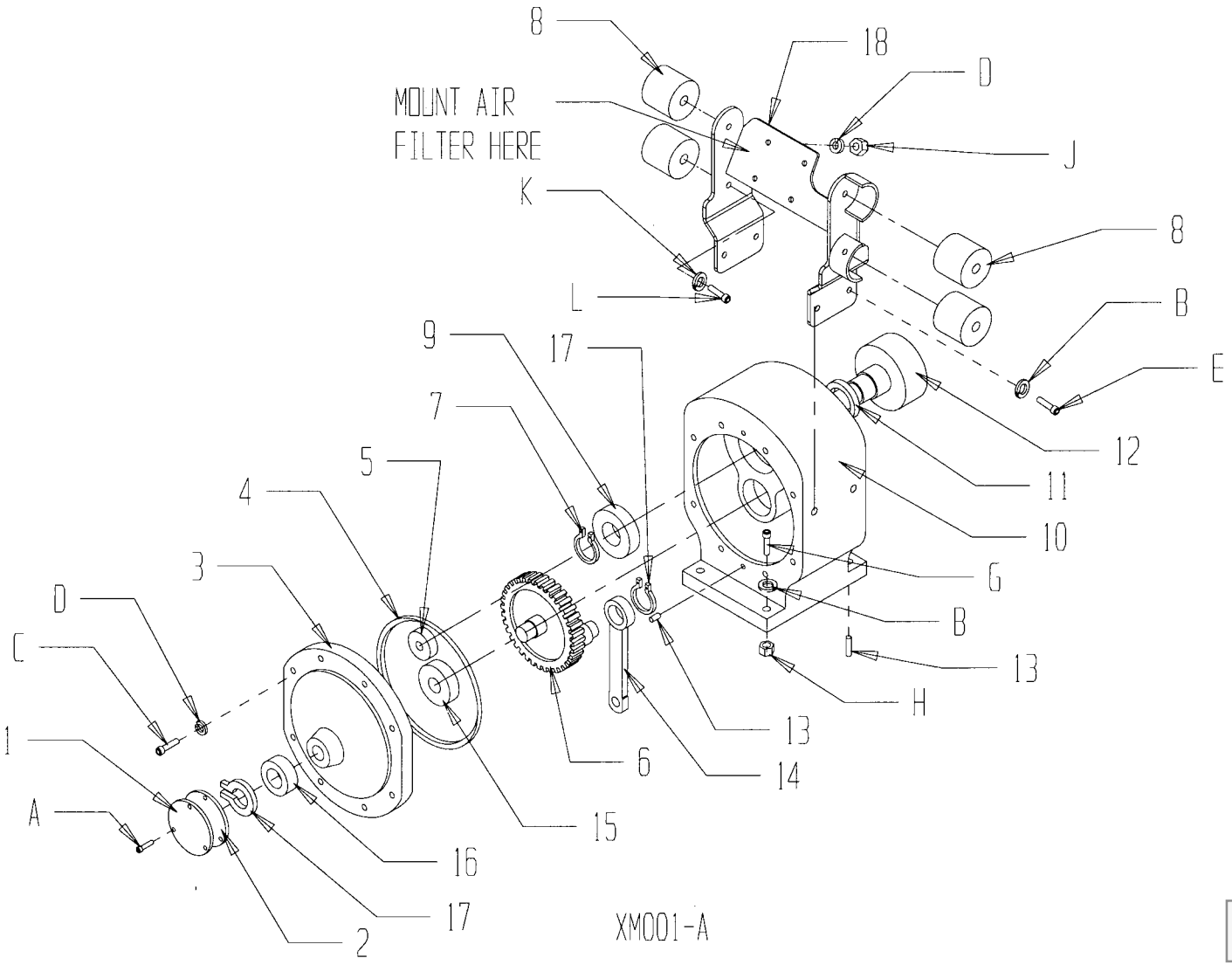
8.4 Gearcase for XT Oil Injected and Pre-Mix

Item	Part No.	Description	Qty.
1	21112	Case Cover with Bearings	1
2	32254	O-Ring	1
3	32022	Bearing	1
4	32255	Bearing	1
5	42471	Crank Shaft Assy 52T	1
6	32023	Bearing	1
7	32213	Bearing	1
8	30192	Retaining Ring	1
9	65000-2	Gearcase Assy with Bearings	1
10	44231-2	Shock Mount Brkt	1
11#	38507	Shaft Seal	1
12	42466	Clutch Shaft 8T	1
13	65004	Shock Mount	4

Item	Part No.	Description	Qty.	DIN
A*	80802	HWHST M8 -1.25 x 25mm ZN	8	7500
B*	80801	SHCS M10 1.5 x 35mm 12.9 BLK	4	912
C	80804	WSHRL M10 Split ZN	8	127B
D*	80803	SHCS M10 1.5 x 25mm 8.8 ZN	4	912
E	80002	PIN 1/4 inch	2	-
F	80805	WSHRL M12 Split ZN	4	127B
G*	80808	HHCS M12 1.75 x 20mm 8.8 ZN	4	933
H	80806	WSHR M10 Flat 20 OD ZN	4	125A
J	80812	WSHRL M8 Split ZN	4	127B
K	80817	NUTNY M8 1.25	4	985

REMARK: # Lube seal with grease when replacing
* Loctite Required

8.5 Gearcase - XM Oil Injected and Pre-Mix



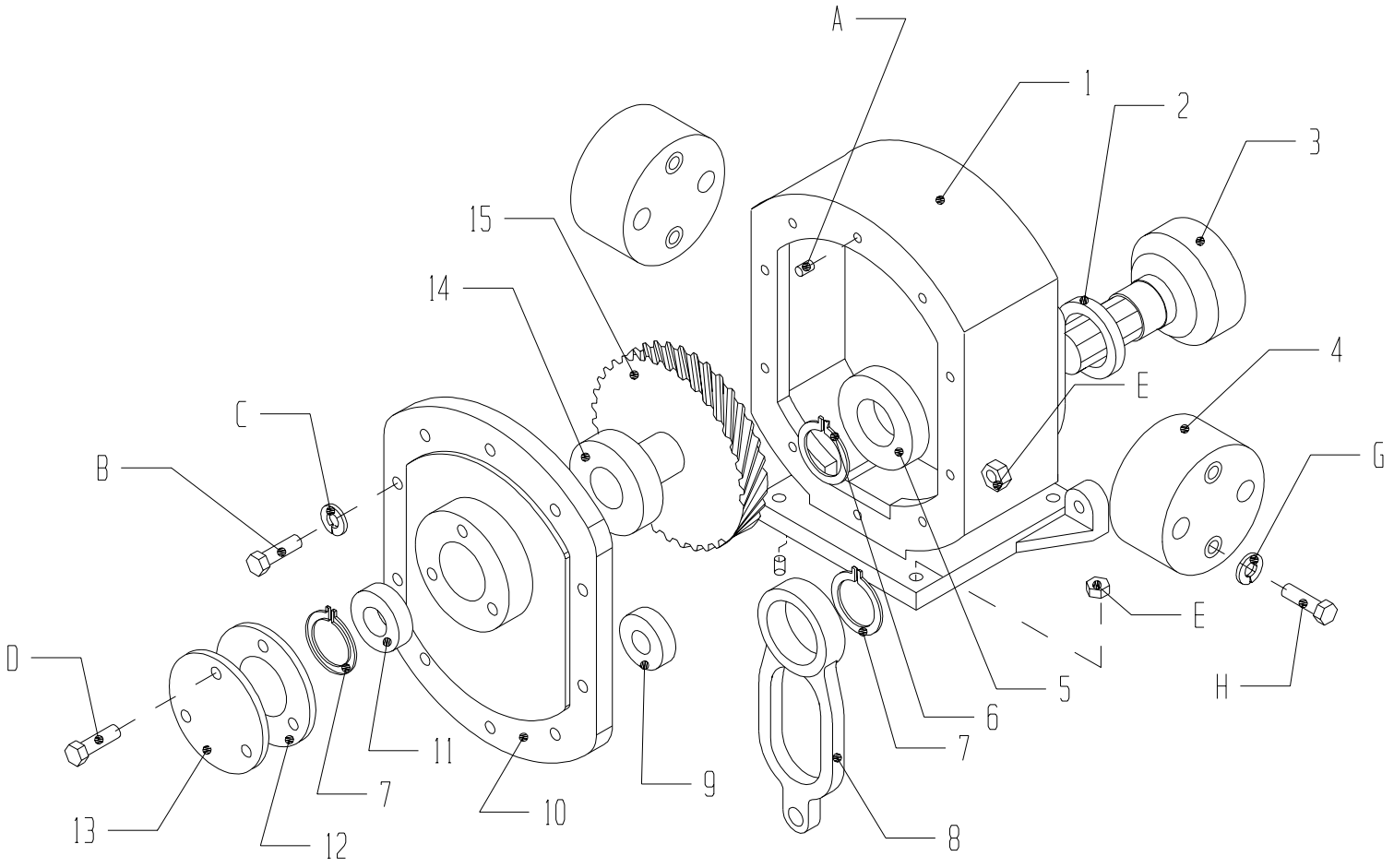
8.5 Gearcase - XM Oil Injected Pre-Mix

Item	Part No.	Description	Qty.
1	65029-2	Cap Speed Cover	1
2	30189	Gasket	1
3**	22991	Gearcase Cover Assy	1
4	32216	O-Ring 81D	1
5	32023	Bearing - 204	1
6	42638	Gear 70 TH XM	1
7	30192	Retaining Ring	1
8	65004	Shock Mount	4
9	32213	Bearing - 206	1
10	65023-2	Case Machined	1
11#	30193	Seal	1
12	28672	Pinion Assy 10T XM	1
13	80002	1/4 Dowel Pin	3
14	28658	Connecting Rod Assy	1
15	32214	Bearing - 307	1
16	32212	Bearing - 205	1
17	30191	Retaining Ring	2
18	44233-2	Weld Handle Bracket	1

Item	Part No.	Description	Qty.	DIN
A*	80821	SHCS M5 .8 x 16mm 8.8 ZN	3	912
B	80804	WSHRL M10 Split ZN XM	8	127B
C*	80810	SHCS M8 1.25 x 20mm 8.8 ZN	8	912
D	80812	WSHRL M8 Split ZN	12	127B
E*	80803	SHCS M10 1.5 x 25mm 8.8 ZN	4	912
G*	80801	SHCS M10 1.5 x 35mm 12.9 BLK **XM**	4	912
H	80833	NUTNY M10 1.5 ZN SW	4	985
J	80817	NUTNY M8 - 1.25	4	985
K	80805	WSHRL M12 Split ZN	4	127B
L	80808	HHCS M12 - 1.75 x 20mm 8.8 ZN	4	933

REMARK: # Lube seal with grease when replacing
** Gearcase Kit PN 23021 includes 1,3,5,16 & 17
* Loctite Required

8.6 Gearcase- XD Diesel



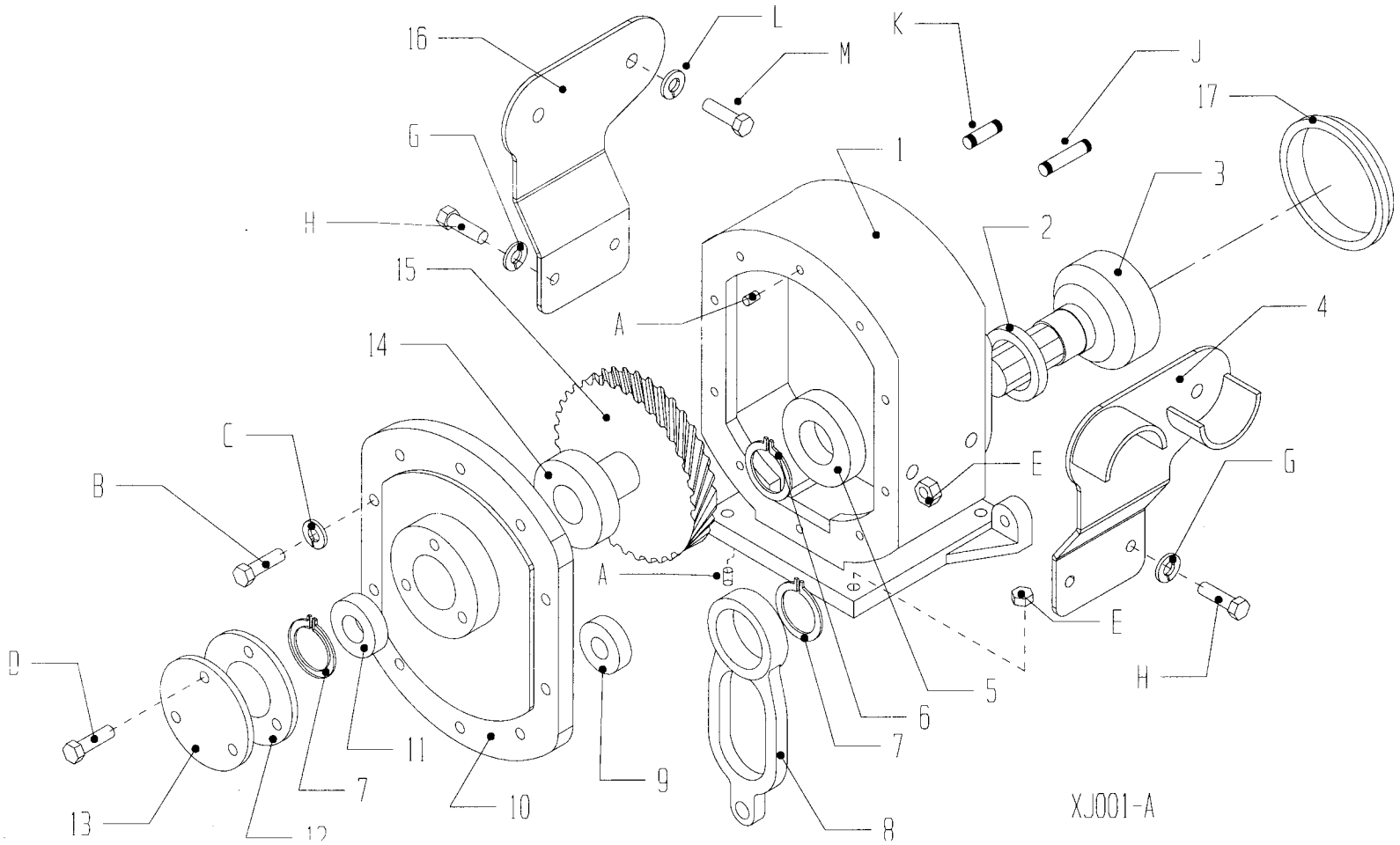
8.6 Gearcase-XD Diesel

Item	Part No.	Description	Qty.
1	65072-2	Gearcase Machined Diesel	1
2	39224	Shaft Seal	1
3	43176	Clutch Shaft Weld 14T	1
4	65025	Shock Mount Metric	2
5	32177	Ball Bearing 6208-2RS	1
6	32305	Ring Ext Retaining 1.57	1
7	30191	Ring External 63/64	2
8	43177	Conn Rod Assembly Machined	1
9	32023	Bearing Ball .787	1
10	65073-2	Gearcase Cover	1
10A#	23039-2	Gearcase Cover Assembly	1
11	32212	Bearing 205	1
12	30189	Gasket Speed Cover	1
13	65073	Speed Cover - Diesel	1
14	32214	Bearing 1.378	1
15	43179	Weldment Crank Gear 70T	1

Item	Part No.	Description	Qty.	DIN
A	80002	PINDL 1/4 x 5/8 PLN	4	-
B*	80810	SHCS M8 -1.25 x 20 8.8 ZN	10	912
C	80812	WSHRL M8 Split ZN	10	27B
D*	80821	SHCS M5 -.8 x 16 8.8 ZN	3	912
E	80833	NUTNY M10 - 1.5 ZN	4	985
G	80804	WSHRL M10 Split ZN	4	127B
H*	80825	SHCS M10 -1.5 x 50 8.8 ZN	4	912

REMARK: * Loctite Required
PN 23039-2 includes 7, 9 - 13

8.7 Gearcase - XJ 4 Cycle



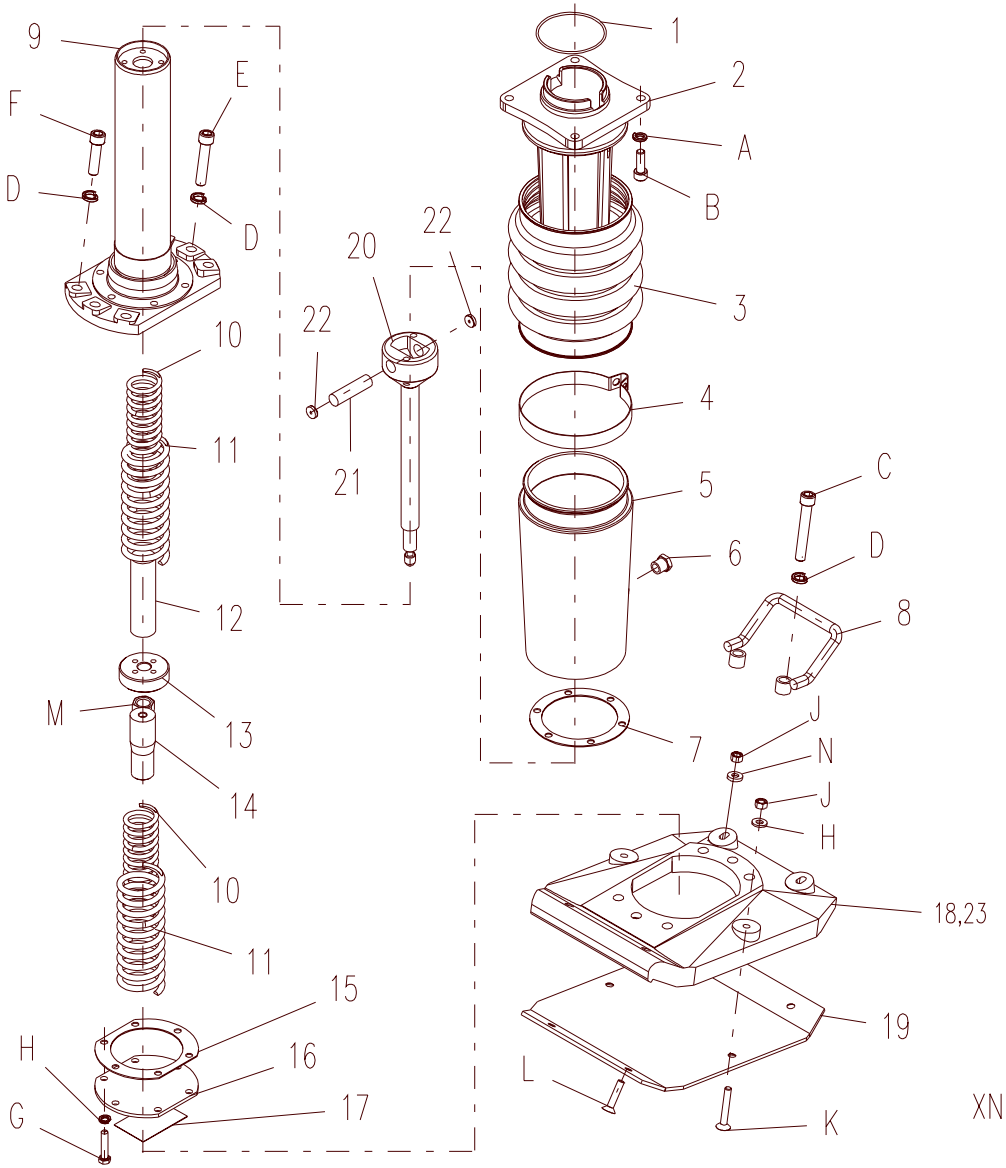
8.7 Gearcase - XJ 4 Cycle

Item	Part No.	Description	Qty.
1	65072-2	Gearcase Machined Diesel	1
2	39224	Shaft Seal	1
3	39472	Clutch Shaft Weld 14T	1
4	39484-2	Bracket Handle Weldment Left	1
5	32177	Ball Bearing 6208-2RS	1
6	32305	Ring Ext Retaining 1.57	1
7	30191	Ring External 63/64	2
8	43177	Conn Rod Assembly Machined	1
9	32023	Ball Bearing .787	1
10	65073-2	Gearcase Cover	1
10A#	23039-2	Gearcase Cover Assembly	1
11	32212	Bearing 205	1
12	30189	Gasket Speed Cover	1
13	65029-2	Speed Cover	1
14	32214	Bearing 1.378	1
15	43179	Weldment Crank Gear 70T	1
16	39467-2	Bracket Handle Right	1
17	39475	Adapter Ring	1

Item	Part No.	Description	Qty.	DIN
A	80002	PINDL 1/4 x 5/8 PLN	4	-
B*	80810	SHCS M8 - 1.25 x 20 8.8 ZN	8	912
C	80812	WSHRL M8 Split ZN	10	27B
D*	80821	SHCS M5 - .8 x 16 8.8 ZN	3	912
E	80833	NUTNY M10 - 1.5 AN	4	985
G	80804	WSHRL M10 Split ZN	4	127B
H*	80886	SHCS M10 - 1.5 x 20 8.8 ZN	4	912
J	80937	STUD M10 - 1.5 x 102 8.8 ZN	1	-
K	80902	STUD M10 - 1.5 x 60 8.8 ZN	3	939FO
L	80805	WSHRL M12 Split ZN	4	127B
M	80808	HHCS M12 - 1.75 x 20 8.8 ZN	4	912

REMARK: * Loctite Required
#PN 23039-2 includes 7, 9 - 13

8.8 Lower Unit - XN Oil Injected and Pre-Mix



XN004-C

8.8 Lower Unit - XN Oil Injected and Pre-Mix

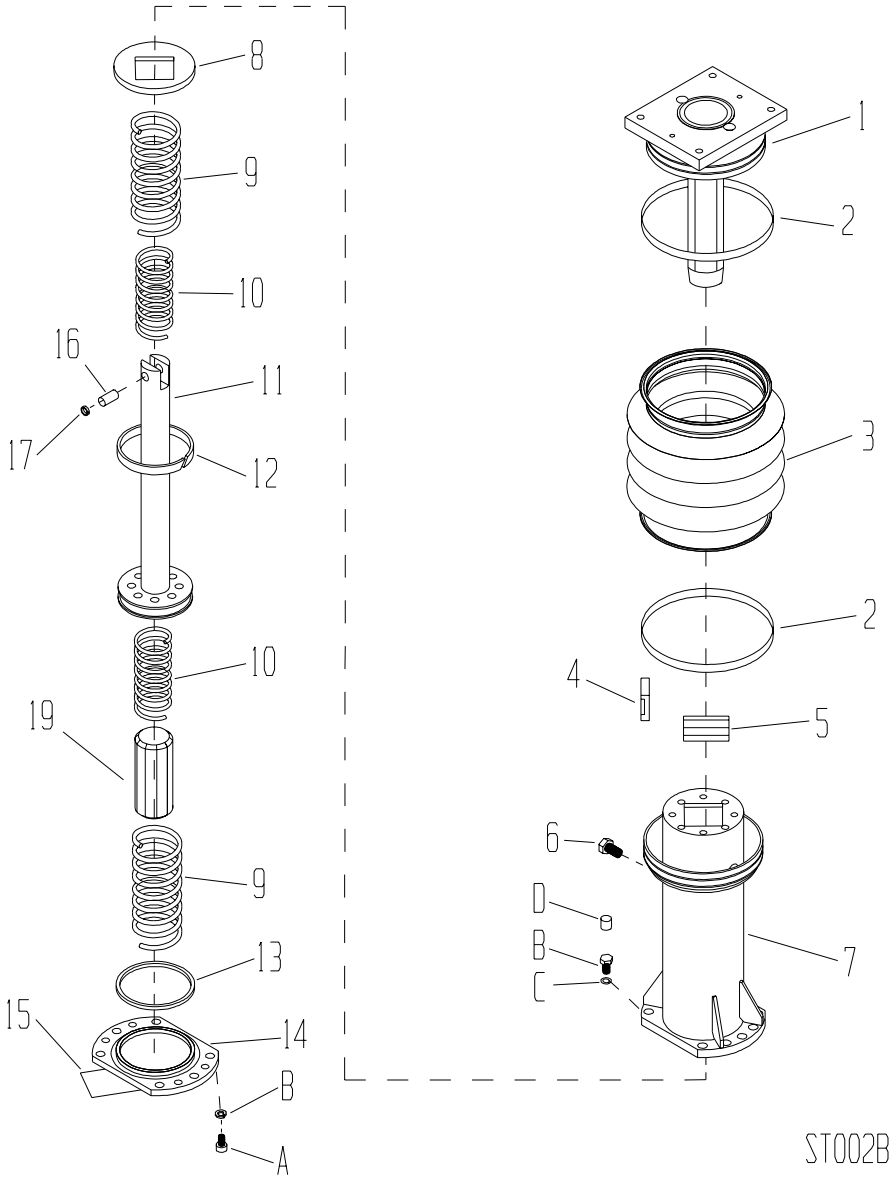
Item	Part No.	Description	Qty.
1	39438	O-Ring 2.5mm x 85mm	1
2	39374	Guide Tube Machined	1
3	39372	Boot	1
4	39439	Boot Clamp 650-85	2
5	39377	Cover Spring HSG Machined	1
6	34096	Oil Sight Plug	1
7	39399	Gasket Spring HSG Cover	1
8	39405	Lifting Grip Weldment	1
9	39398	Spring HSG Weldment	1
10	39382	Spring Inner	2
11	39383	Spring Outer	2
12	39384	Snubber Axial, Top	1
13	39389	Puck Piston Guide	1
14	39385	Snubber Axial, Lower	1
15	39390	Gasket Spring Cover	1
16	39392	Cover Bottom, Spring	1
17	55026	Decal Waring Spring	1
18	39371	Shoe	1
19	39400	Plate Shoe	1
20	39381	Rod Piston Machined	1
21	39436	PINDL .625 x 2.25 LG	1
22	39401	Button Pin Captivator	2
23#	65028	Hex Insert	6
24#	23151	Shoe Kit (Includes items 18, 19, 23, H, J, K, L, N)	1

Item	Part No.	Description	Qty.	DIN
A	80804	WSHRL M10 Split ZN	4	127B
B*	80872	SHCS M10 - 1.5 x 30 8.8 ZN	4	912
C*	80943	SHCS M12 - 1.75 x 100 8.8 ZN	2	912
D	80805	WSHRL M12 Split ZN	6	127B
E*	80824	SHCS M12 - 1.75 x 80 8.8 ZN	1	912
F*	80822	SHCS M12 - 1.75 x 50 8.8 ZN	3	912
G*	80762	HHCS M8 - 1.25 x 40 8.8 ZN	6	933
H	80857	WSHR M8 Flat 16 OD ZN	2	125A
J**	80817	NUTNY M8 - 1.25 ZN	6	985
K*	80948	FHSCS M8 - 1.25 x 55 10.9	4	7991
L*	80949	FHSCS M8 - 1.25 x 45 10.9	2	7991
M	80852	NUTNY M16 - 2 ZN	1	985
N	39233	WSHR .343 ID x 1.00 OD x .17 ZN	4	---

The spring retaining Base Plate retains heavy springs under compression. Follow the instructions (Base Plate Removal located on Page 53 of this manual) carefully or severe personal injury may occur.

REMARK: # Not Shown
* Loctite
** Torque 18 ft.lbs. (24.4 Nm)

8.9 Lower Unit - XT Oil Injected and Pre-Mix



8.9 Lower Unit - XT Oil Injected and Pre-Mix

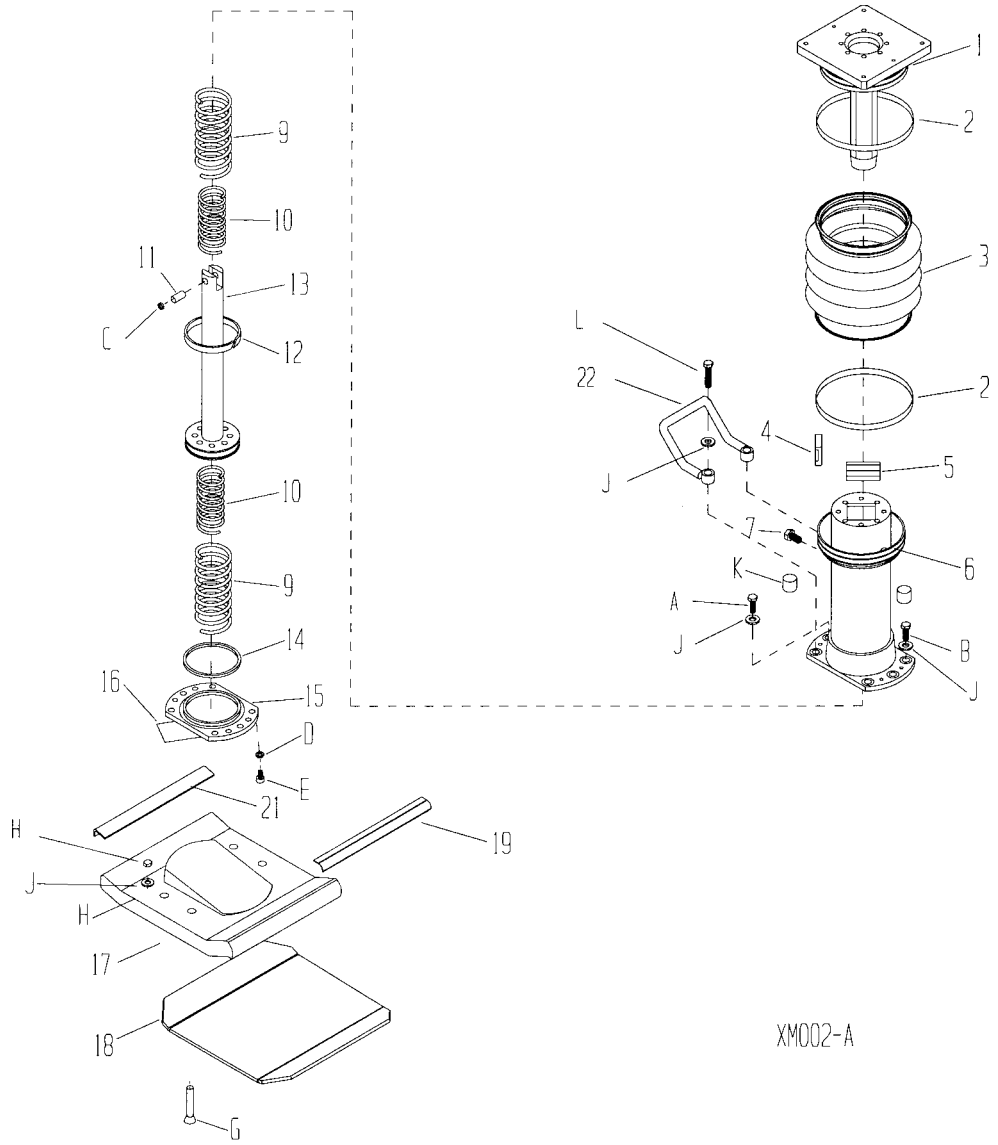
Item	Part No.	Description	Qty.
1	65050-2	Guide Tube	1
2	44106	Boot Clamp	2
3	47361	Boot	1
4	27938	Bushing Short	2
5	27939	Bushing Long	2
6^	34096	Oil Sight Gauge	1
7	65008-2	Spring Housing	1
8	42318	Spring Spacer	1
9	42619	Spring Outer	2
10	42620	Spring Inner	2
11	42923	Piston Assy	1
12	27521	Piston Ring	1
13	32033	O-Ring	1
14	65009-2	Base Plate	1
15	55026	Safety Decal	1
16	80423	Rod Pin	1
17	80519	Internal Retainer Ring	1
18	65011-2	Shoe 11 (Not Shown)	
19	47441	Snubber - Axial, Lower	1
20#	23344	Snubber Kit	

Item	Part No.	Description	Qty.	DIN
A*	80803	SHCS M10 1.5 x 25mm 8.8 ZN	4	912
B	80804	WSHRL M10 Split ZN	4	127B
C*	80819	SHCS M12 1.75 x 35mm 8.8 ZN	6	912
D	80805	WSHRL M12 Split ZN	6	127B
E	80765	Cap Plastic Blk	6	-

The spring retaining Base Plate retains heavy springs under compression. Follow the instructions (Base Plate Removal located on Page 53 of this manual) carefully or severe personal injury may occur.

REMARK:
^ Use of a socket wrench is recommended to avoid damage to the sight gauge.
* Loctite Required
# Not Shown

8.10 Lower Unit for XM Oil Injected and Pre-Mix



8.10 Lower Unit for XM Oil Injected and Pre-Mix

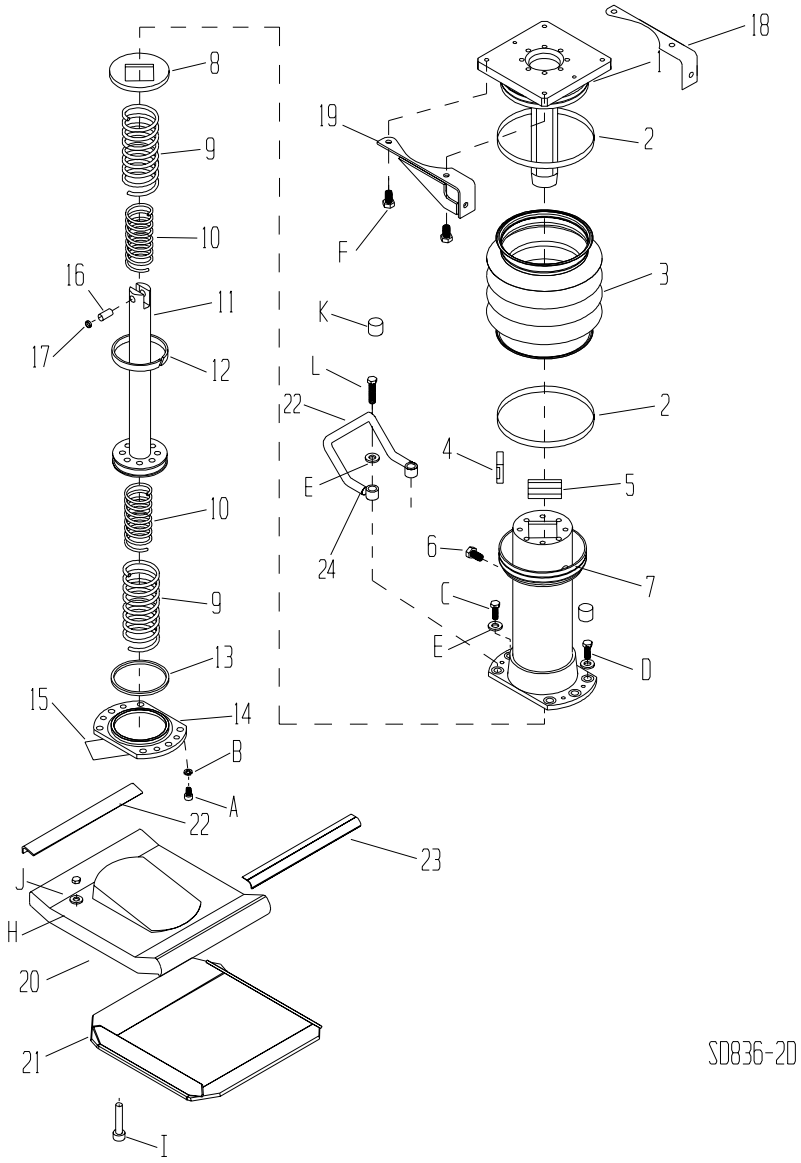
Item	Part No.	Description	Qty.
1	65032-2	Guide Tube	1
2	44106	Boot Clamp	2
3	47361	Boot	1
4	27938	Bushing Short	2
5	27939	Bushing Long	2
6	65051-2	Spring Housing	1
7*	34096	Oil Sight Gauge	1
8	42318	Spacer, Bearing to Spring	1
9	42661	Spring Outer	2
10	42662	Spring Inner	2
11	80423	Rod Pin	1
12	28694	Piston Ring	1
13	28701	Piston Rod Assembly	1
14	32033	O-Ring	1
15	65026-2	Base Plate	1
16	55026	Spring Housing Safety Decal	1
17	47302	Shoe	1
	65028	Insert	6
18	65024-2	Shoe Plate	1
19	29215-2	Shoe Edge Guard	1
21	42353-2	Stiffener Rear Shoe	1
#	22988	Shoe Kit (includes 17,18,19, 21 and hardware)	1
22	39480	Lifting Grip Weldment Assy.	1

Item	Part No.	Description	Qty.	DIN
A	80824	SHCS M12 - 1.75 x 80 8.8 ZN	3	912
B	80822	SHCS M12 - 1.75 x 50mm 8.8 ZN	3	912
C	80519	Internal Retaining Ring	1	-
D	80812	WSHRL M8 Split ZN	10	127B
E	80720	SHCS M8 - 1.25 x 25mm 8.8 ZN	4	912
F#	80813	WSHR M8 x 24 OD ZN	10	9021B
G	80823	FHSCS M8 - 1.25 x 50mm 10.9 ZN	10	7991
H	80814	NUTNY M8 1.25 ZN	10	985
J	80805	WSHRL M12 Split ZN	6	127B
K	80765	Cap Plastic Blk	6	-
L	80943	SHCS M12 - 1.75 x 100 8.8 ZN	2	912

The spring retaining Base Plate retains heavy springs under compression. Follow the instructions (Base Plate Removal located on Page 53 of this manual) carefully or severe personal injury may occur.

REMARK: * Use of a socket wrench is recommended to avoid damage to the sight gauge.
Not Shown

8.11 Lower Unit- XD Diesel & XJ 4 Cycle



8.11 Lower Unit- XD Diesel & XJ 4 Cycle

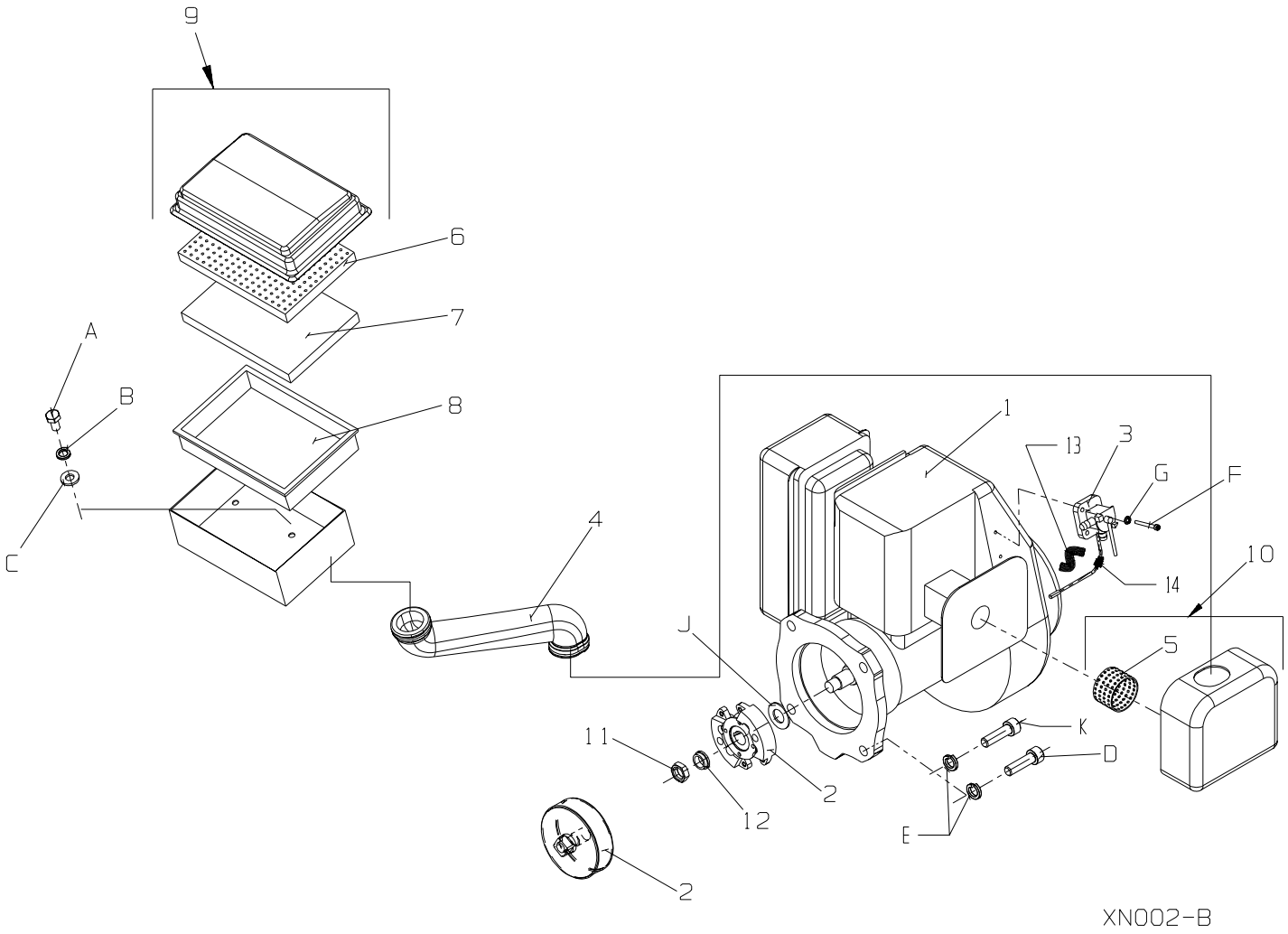
Item	Part No.	Description	Qty.
1	65032-2	Guide Tube Weld	1
2	44106	Clamp Boot	2
3	47361	Boot Urethane	1
4	27938	Bushing Short Square Guide	2
5	27939	Bushing Long Square Guide	2
6	34096	Oil Sight Plug	1
7	65069-2	Spring Housing Diesel	1
8	42318	Spring Spacer Cast	1
9	42661	Blue/Blue Spring Outer (Diesel)	2
	42619	Red/Blue Spring Outer (4 cycle)	2
10	42662	Blue/Yellow Spring Inner (Diesel)	2
	42620	Green/Yellow Spring Inner (4 cycle)	2
11	43181	Weldment Diesel Piston	1
12	28694	Ring Piston	1
13	32033	O-Ring 01-242 All	1
14	65065	Shoe Plate Diesel	1
15	55026	Decal Warning Spring	1
16	80423	Con Rod Pin .5 x 1.25 P	1
17	80519	Ring Internal 1/2 PLN	1
18	65067	Weldment Support Guide Right	1
19	65066	Weldment Support Guide Left	1
20	47302	Shoe	1
	65028	Insert	6
21	65064	Base Plate Weld	1
22	42353	Stiffener Rear	1
23	29215	Shoe Guard	1
24	39480	Lifting Grip Weld Assembly (XJ)	1
25^	23038	Shoe Kit	1

Item	Part No.	Description	Qty.	DIN
A*	80720	SHCS M8 -1.25 x 25 8.8 ZN	4	912
B	80812	WSHRL M8 Split ZN	10	127B
C*	80822	SHCS M12 -1.75 x 50 8.8 ZN	3	912
D*	80824	SHCS M12 -1.75 x 80 8.8 ZN	3	912
E	80826	WSHR M12 Split ZN	6	127B
F*	80838	HHCS M10 -1.5 x 50 8.8 ZN	4	931
H	80813	WSHR M8 x 24 OD ZN	10	9021B
I*	80823	FHSCS M8 -1.25 x 50 10.9 ZN	10	7991
J	80814	NUTNY M8 ZN	10	985
K	80765	Cap Plastic Blk	6	-
L	80943	SHCS M12 - 1.75 x 100 8.8	2	912

The spring retaining Base Plate retains heavy springs under compression. Follow the instructions (Base Plate Removal located on Page 53 of this manual) carefully or severe personal injury may occur.

REMARK: See Warning for Base Plate
* Loctite Required ^ Shoe Kit Includes Items 20, 21, 22, 23, B, C, D, H, I

8.12 Engine - XN, XT & XM Oil Injected and Pre-Mix



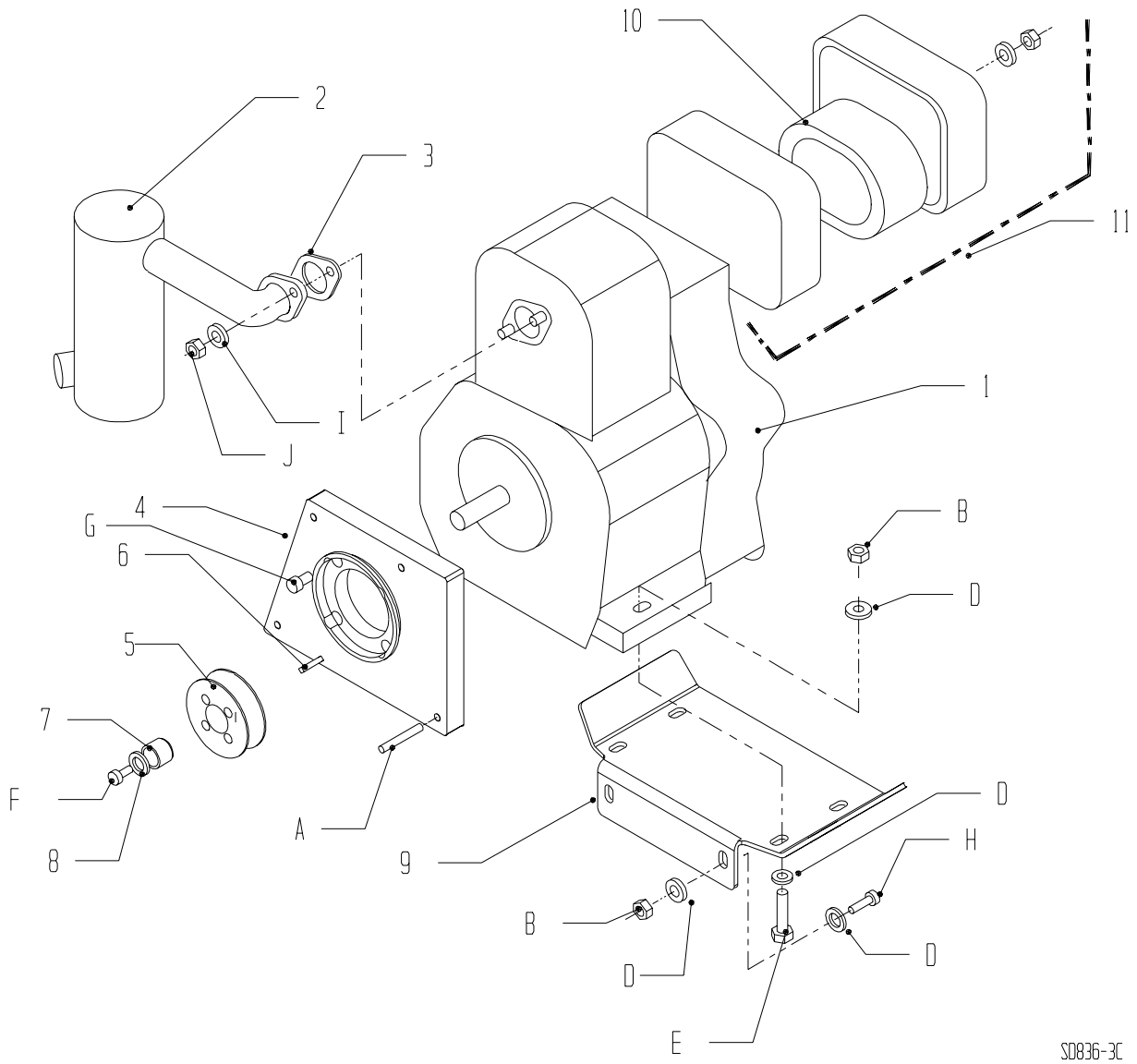
8.12 Engine - XN, XT & XM Oil Injected and Pre-Mix

Item	Part No.	Description	Qty.
1**	23208	Kit EC12 O/I Engine XN	1
	23209	Kit EC12 O/I Engine XT	1
	23210	Kit EC12 Pre-Mix Engine XN	1
	23211	Kit EC12 Pre-Mix Engine XT	1
	23212	Kit EC12 O/I Engine XM	1
	23213	Kit EC12 Pre-Mix Engine XM	1
2	30356	Clutch Robin Honda (XM, XJ)	1
	30308	Clutch (XN & XT)	1
3	23148	Kit Valve/Kill Switch	1
4	39396	Hose Air Filter (XN)	1
	39397	Hose Air Filter (XT, XM)	1
5	35995	Filter/Precleaner Lower EC10/EC12	1
6	39329	Air Filter Coarse 1st Stage	1
7	39330	Air Filter Fine 1st Stage	1
8	39332	Frame Air Filter 1st Stage	1
9	23144	Air Filter Assy 1st Stage	1
10	23142	Air Filter Assy Primary	1
11	35060	Nut M12 - 1.25 (XN & XT)	1
12	27242	Spacer (XN & XT)	1
13	39489	Fuel Line 3/16 ID x 2 3/4	1
14	39502	Clamp Cable .083	1
15	39478	Fuel Line 3/16 ID x 23" LG	1

Item	Part No.	Description	Qty.	DIN
A*	80406	HHCS M8 - 1.25 x 20mm 8.8 ZN	4	933
B	80812	WSHRL M8 Split ZN	4	127B
C	80813	WSHR M8 Flat 24 OD ZN	4	9021B
D*	80815	HHCS M10 - 1.5 x 30mm 8.8 ZN	4	912
E	80804	WSHRL M10 Split ZN	4	7980
F	80926	CHSMS M4 x 16mm	2	7981
G	80929	WSHRL M4 Split ZN	2	127B
J	80426	WSHR 9/16 Type B ZN	1	-
K	80872	SHCS M10-1.5 x 30 8.8 ZN (XM)	2	912

REMARK: * Loctite Required
** Kit to include all parts shown fully assembled.

8.13 Engine - XD Diesel



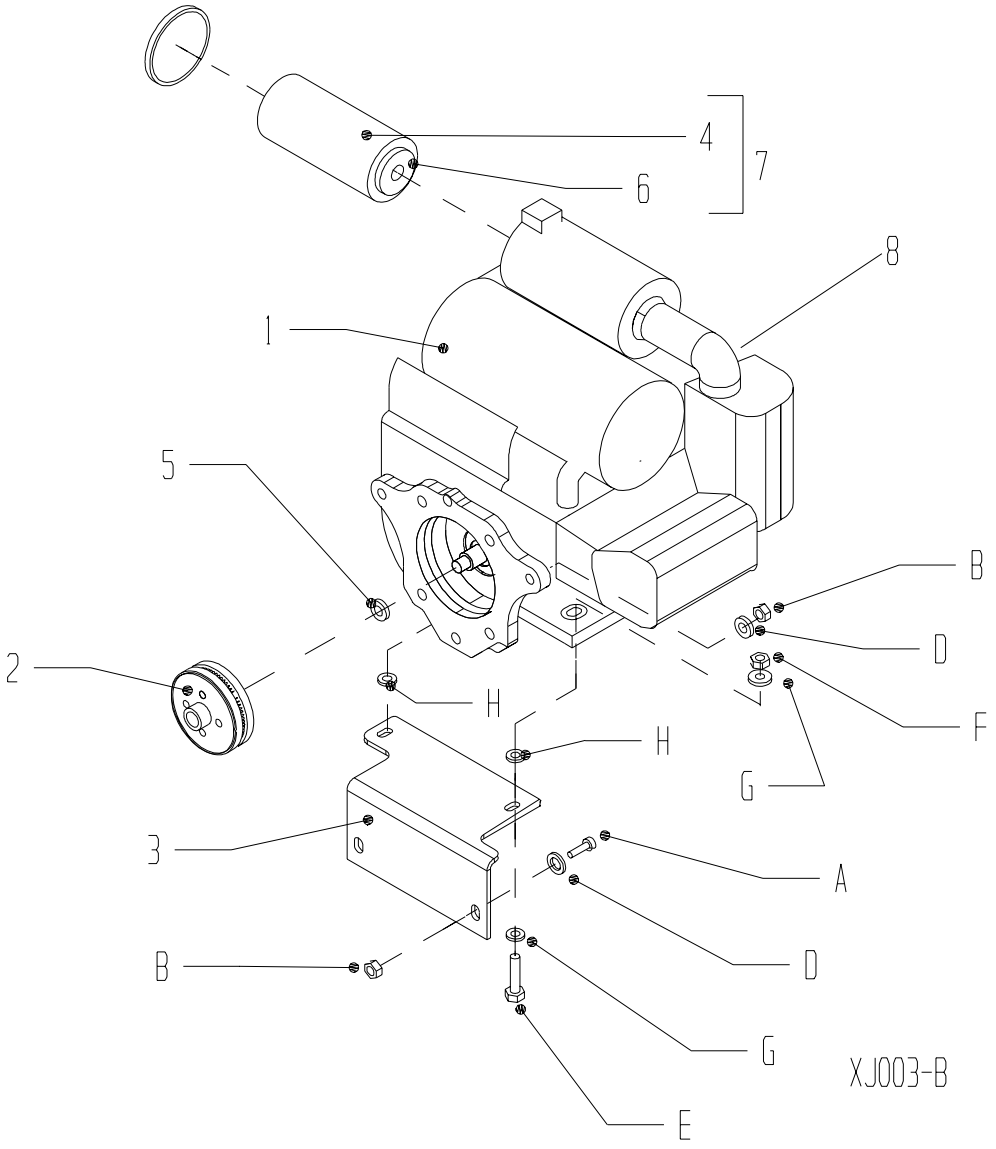
8.13 Engine - XD Diesel

Item	Part No.	Description	Qty.
1	31244	Engine Yanmar L40A 4HP	1
2	31245	Muffler Special Yanmar	1
3	39236	Gasket Exhaust	1
4	65071	Adaptor Yanmar L40 Diesel	1
5	23042	Clutch Assembly	1
6	80611	Square Key	1
7	43187	Spacer Clutch Hub Diesel	1
8	65075	Washer Clutch Retainer	1
9	65068	Weldment Engine Support	1
10	39235	Air Filter with Precleaner	1
11	39237	Air Filter Assembly	1

Item	Part No.	Description	Qty.	DIN
A*	80902	STUD M10 - 1.5 x 60 8.8 ZN	4	939
B	80833	NUTNY M10 - 1.5 ZN	6	985
D	80806	WSHR M10 Flat 200D ZN	12	125A
E*	80838	HHCS M10 - 1.5 x 50 8.8 ZN	4	931
F*	80173	HHCS5/16 - 24 x 1 GR5 ZN	1	-
G*	80810	SHCS M8 - 1.25 x 20 8.8 ZN	4	912
H*	80803	SHCS M10 - 1.5 x 25 8.8 ZN	2	912
I	80813	WSHR M8 Flat 24 OD ZN	2	9021B
J	80814	NUTFX M8 - 1.25 ZN2	2	934

REMARK: * Loctite Required

8.14 Engine - XJ 4 Cycle



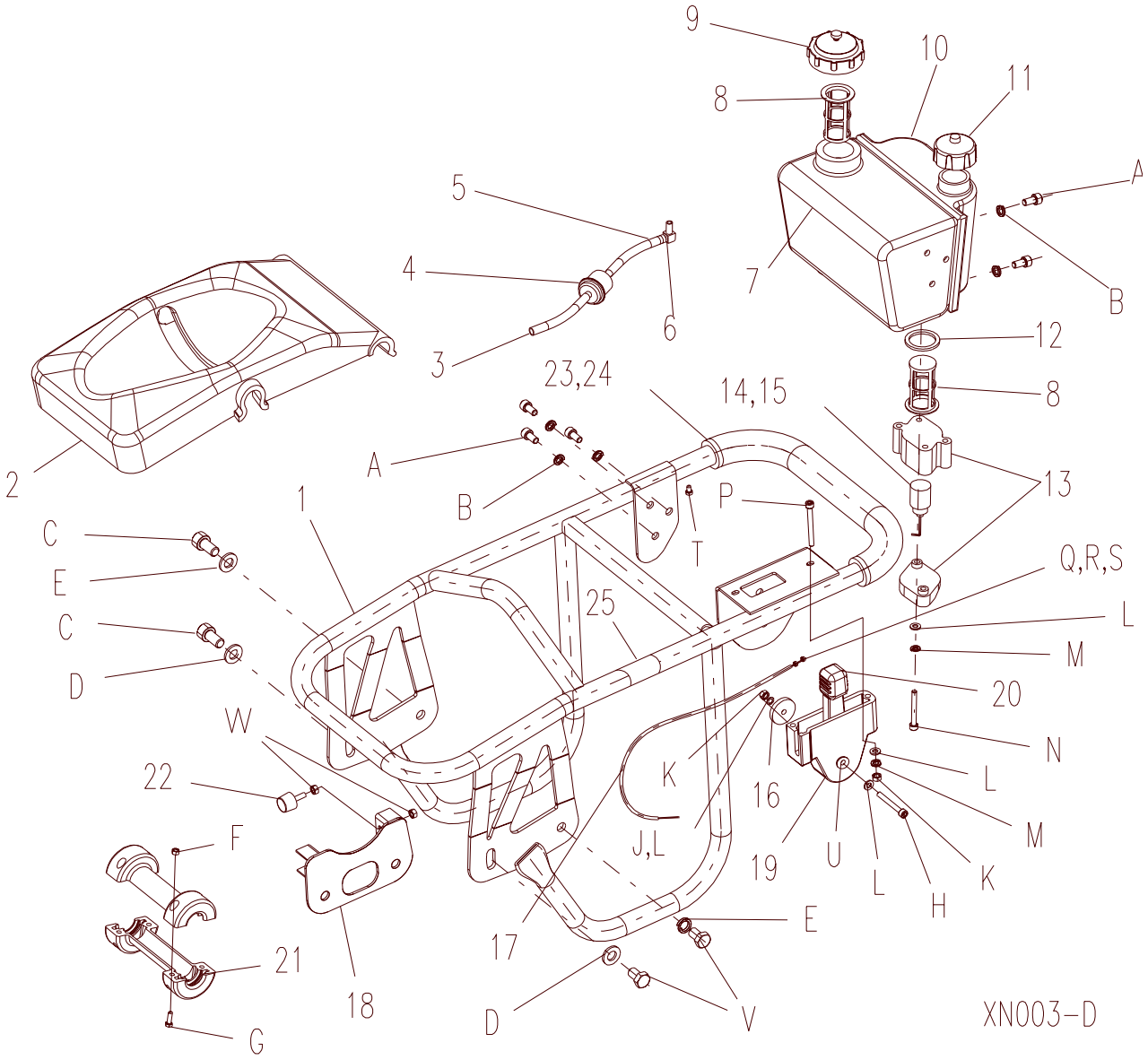
8.14 Engine - XJ 4 Cycle

Item	Part No.	Description	Qty.
1	30567	Engine 4 Cycle Honda	1
2	30356	Clutch Assembly	1
3	39453-2	Engine Support Weldment	1
4	39490	Air Filter Outer Honda GX120	1
5	39498	Spacer Clutch	1
6	39511	Air Filter Inner Honda GX120	1
7	23152	Kit Air Filter Honda GX120	1
8#	39513	Fuel Reservoir Tip Over	1

Item	Part No.	Description	Qty.	DIN
A*	80803	SHCS M10 - 1.5 x 25 8.8 ZN	2	939
B	80833	NUTNY M10 - 1.5 ZN	6	985
D	80806	WSHR M10 Flat ZN	6	125A
E*	80892	HHCS M8 - 1.5 x 35 8.8 ZN	2	931
F*	80817	NUTNY M8 - 1.25 ZN	2	985
G	80857	WSHR M8 ZN	4	912
H	26325	WSHR 3/8 x 1.00 ZN	2	-

REMARK: * Loctite Required
Not Shown

8.15 Handle and Fuel Tank - XN Oil Injected and Pre-Mix



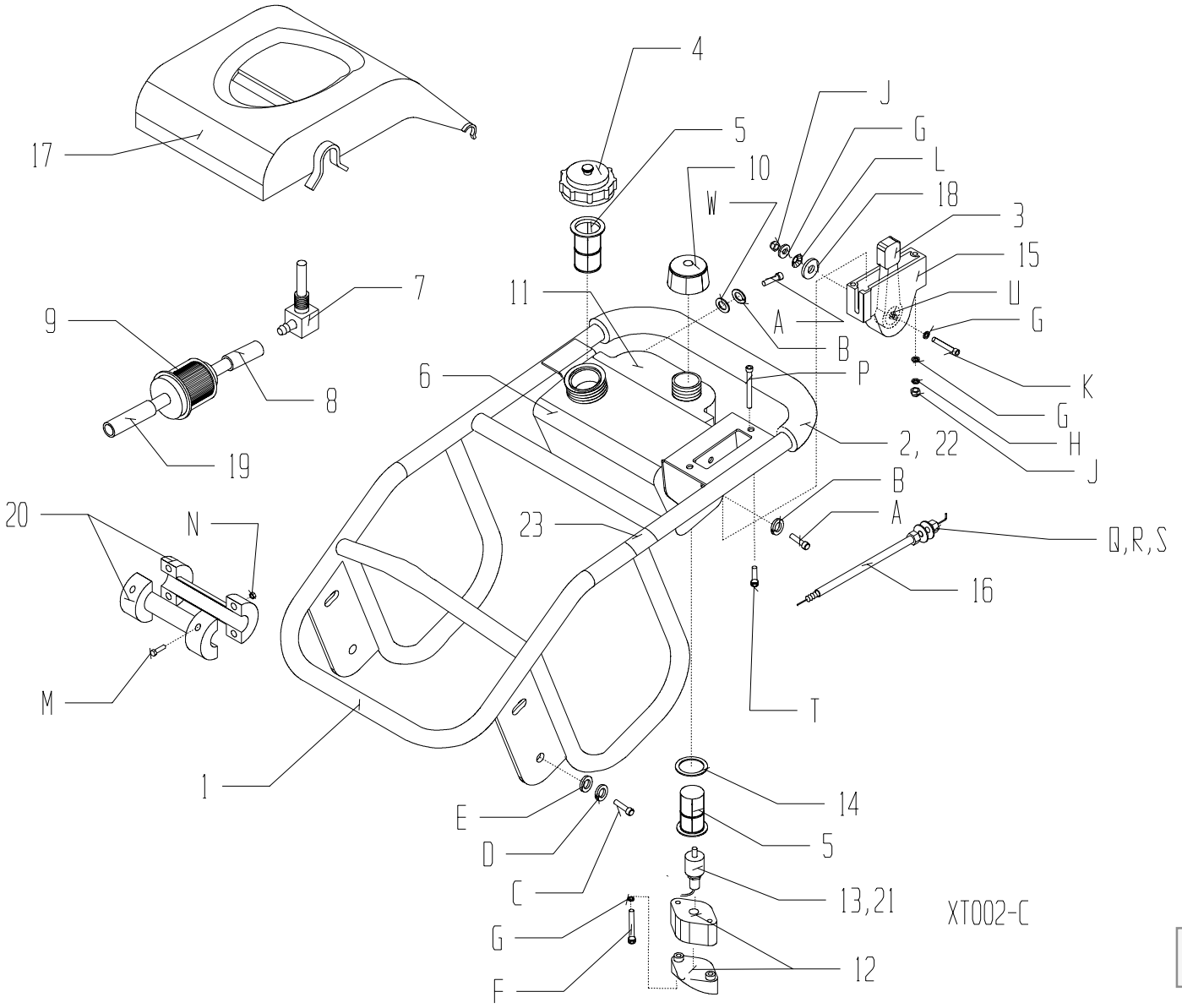
8.15 Handle and Fuel Tank - XN Oil Injected and Pre-Mix

Item	Part No.	Description	Qty.
1	39419-2	Handle Weldment	1
2	39421	Cover	1
3	39477	Fuel Line 3/16 ID x 6 1/4" LG	1
4	35486	Fuel Filter	1
5	39478	Fuel Line 3/16 ID x 23" LG	1
6	23022	Tank Fitting	1
7	65081	Fuel Tank (Pre-Mix)	1
	39350	Fuel Tank (Oil Injected)	1
8	47219	Fuel Strainer (Pre-Mix)	1
	47219	Fuel Strainer (Oil Injected)	2
9	35701	Cap Plastic Gas	1
10	39349	Tank Oil (Oil Injected)	1
11	39346	Cap Oil (Oil Injected)	1
12	32314	Gasket (Oil Injected)	1
13	23065	Kit, Tank Guard (Oil Injected)	1
14	39316	Oil Sensor (Oil Injected)	1
15	39476	O-Ring (Oil Injected)	1
16	39402	Washer Clutch, Throttle	1
17^ +	39440	Throttle Cont. Connector	1
18	39424-2	Stopper Weldment	1
19	39386	Housing - Throttle	1
20	39387	Lever - Throttle	1
21	39407	Wheel - Handle (optional)	2
22	39427	Shock Mount Type KD	2
23	39411	Tube Grip	1
24	39420	Cushion Grip	1
25+	34091	Clamp Cable	1

Item	Part No.	Description	Qty.	DIN
A*	80894	SHCS M8 - 1.25 x 16 8.8 ZN (Pre-Mix)	6	912
	80894	SHCS M8 - 1.25 x 16 8.8 ZN (Oil Inj.)	10	912
B	80812	WSHRL M8 Split ZN (Pre-Mix)	6	127B
	80812	WSHRL M8 Split ZN (Oil Inj.)	10	127B
C*	80808	HHCS M12 - 1.75 x 20 8.8 ZN	2	912
D	80807	WSHR M12 Flat ZN	4	125A
E	80805	WSHRL M12 Split ZN	4	127B
F	80850	NUTNY M5 - .8 ZN	4	985
G	80821	SHCS M5 - .8 x 16 8.8 ZN	4	912
H	80947	HHCS M6 - 1 x 40 8.8 ZN	1	931
J	80939	WSHR M6 Belleville 1/4 ID	1	-
K	80851	NUTNY M6 ZN	2	985
L	80856	WSHR M6 Flat ZN (Oil Inj.)	6	125A
	80856	WSHR M6 Flat ZN (Pre-Mix)	4	125A
M	80860	WSHRL M6 Split ZN (Oil Inj.)	4	127B
	80860	WSHRL M6 Split ZN (Pre-Mix)	2	127B
N	80912	SHCS M6 - 1 x 50 Black (Oil Inj.)	2	912
P	80940	SHCS M6 - 1 x 60 8.8 ZN	2	912
Q	80247	NUTFX 5/16 - 24 ZN	2	-
R	80495	WSHR 5/16 Plain ZN	1	-
S	80086	WSHRL 5/16 Split ZN	1	-
T	80586	HWHST 5/16 - 18 x .50 ZN	2	-
U	80347	WSHR 1/4 WROT ZN	1	-
V	80887	HHCS M12 - 1.75 x 25 8.8 ZN	2	933
W	80853	NUTKP M6 ZN	4	-
#	39150	Hose Guard 3/8 Nylo Braid (ROI)	1	-
#	48413	Wiring Harness	1	-
#	39308	Ferrule (ROI)	2	-
#	35448	Clamp 5/8	3	-
#	39509	Clamp 3/8	1	-
#	23428	Kit Cable Control XN	1	-

REMARK: * Loctite Required
Not Shown
^Lubricate Throttle Wire
+ Included in P/N 23428

8.16 Handle and Fuel Tank - XT/XM Oil Injected and Pre-Mix



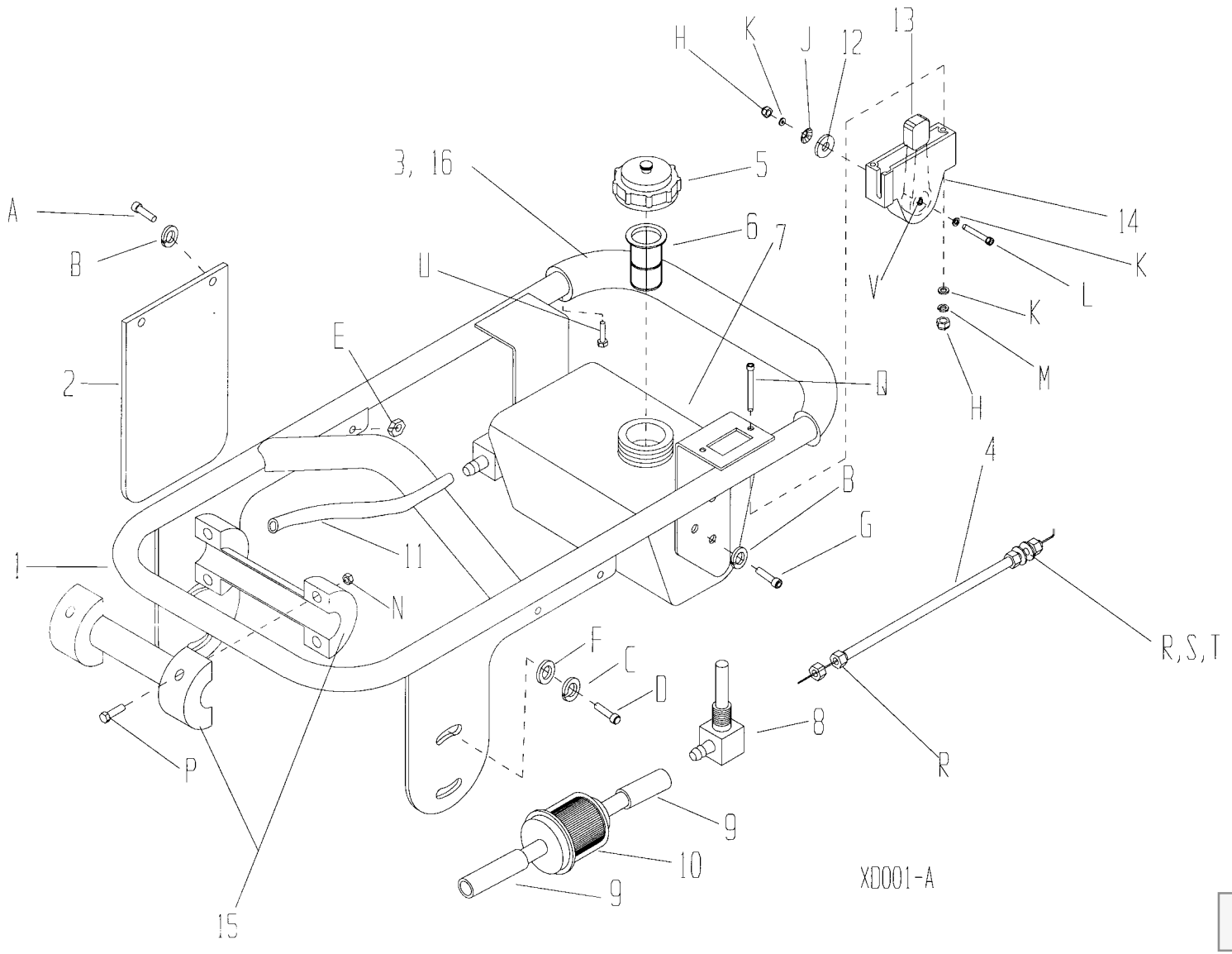
8.16 Handle and Fuel Tank - XT/XM Oil Injected and Pre-Mix

Item	Part No.	Description	Qty.
1	44215-2	Handle Weld Assembly	1
2	39483	Handle Grip Cushion	1
3	39387	Throttle Lever	1
4	35701	Cap Gas	1
5	47219	Strainer (Oil Injected)	2
	47219	Strainer (Pre-Mix)	1
6	39350	Tank Gas (Oil Injected)	1
	65081	Tank Gas (Pre-Mix)	1
7	23022	Tank Fitting	1
8	39488	Fuel Line 3/16 ID x 15" LG	1
9	35486	Filter Gas	1
10	39346	Cap Oil (Oil Injected)	1
11	39349	Tank Oil (Oil Injected)	1
12	23065	Tank Guard Set (Oil Injected)	1
13	39316	Sensor Oil (Oil Injected)	1
14	32314	Gasket, Oil Tank (Oil Injected)	1
15	39386	Throttle HSG	1
16^ +	39485	Throttle Control	1
17	39426	Cover - Plastic	1
18	39402	Washer Clutch	1
19	39477	Fuel Line 3/16 ID x 6 1/4" LG	1
20	39407	Handle Wheel (optional)	2
21	39476	O-Ring (Oil Injected)	1
22	42819	Tube Grip	1
23+	34091	Clamp Cable	1
#	39150	Hose, Guard (Oil Injected)	1
#	48413	Wiring Harness (Oil Injected)	1
#	39308	Ferrule (Oil Injected)	2

Item	Part No.	Description	Qty.	DIN
A*	80894	SHCS M8 - 1.25 x 16mm 8.8 ZN (Oil Inj.)	10	912
	80894	SHCS M8 - 1.25 x 16mm 8.8 ZN (Pre-Mix)	6	
B	80812	WSHRL M8 Split ZN (Oil Inj.)	10	127B
	80812	WSHRL M8 Split ZN (Pre-Mix)	4	
C*	80887	HHCS M12 - 1.75 x 25mm 8.8 ZN (XT)	4	933
D	80805	WSHRL M12 Split ZN (SM)	4	127B
E	80807	WSHR M12 x 24 OD ZN (ST)	4	125A
F	80912	SHCS M6 x 50 BLK BN2 (Oil Inj.)	4	-
G	80856	WSHR M6 Flat 12 OD ZN (Oil Inj.)	6	125A
	80856	WSHR M6 Flat 12 OD ZN (Pre-Mix)	4	
H	80860	WSHRL M6 ZN	2	127B
J	80851	NUTNY M6 - 1.0	3	985
K	80947	HHCS M6 - 1 x 40 8.8 ZN	1	931
L	80939	WSHR Belleville 1/4 ID	1	-
M	80821	SHCS M5 - .8 x 16 8.8 ZN (optional)	4	933
N	80850	NUTNY M5 - .8 ZN (optional)	4	985
P	80940	SHCS M6 - 1 x 60 8.8 ZN	2	-
Q	80247	NUTFX 5/16 - 24 ZN	2	-
R	80086	WSHRL 5/16 Split ZN	1	-
S	80495	WSHR 5/15 Plain ZN	1	-
T	80586	HWHST 5/16 - 18 x .50 ZN	2	-
U	80347	WSHR 1/4 WROT ZN	1	-
V#	39509	Clamp 3/8	1	
W	80813	WSHR M8 Flat (Oil Inj.)	4	
X#	23427	Kit Cable Control	1	-

REMARK: * Loctite Required
Not Shown
^Lubricate Throttle Wire
+ Included in P/N 23427

8.17 Handle and Fuel Tank - XD Diesel



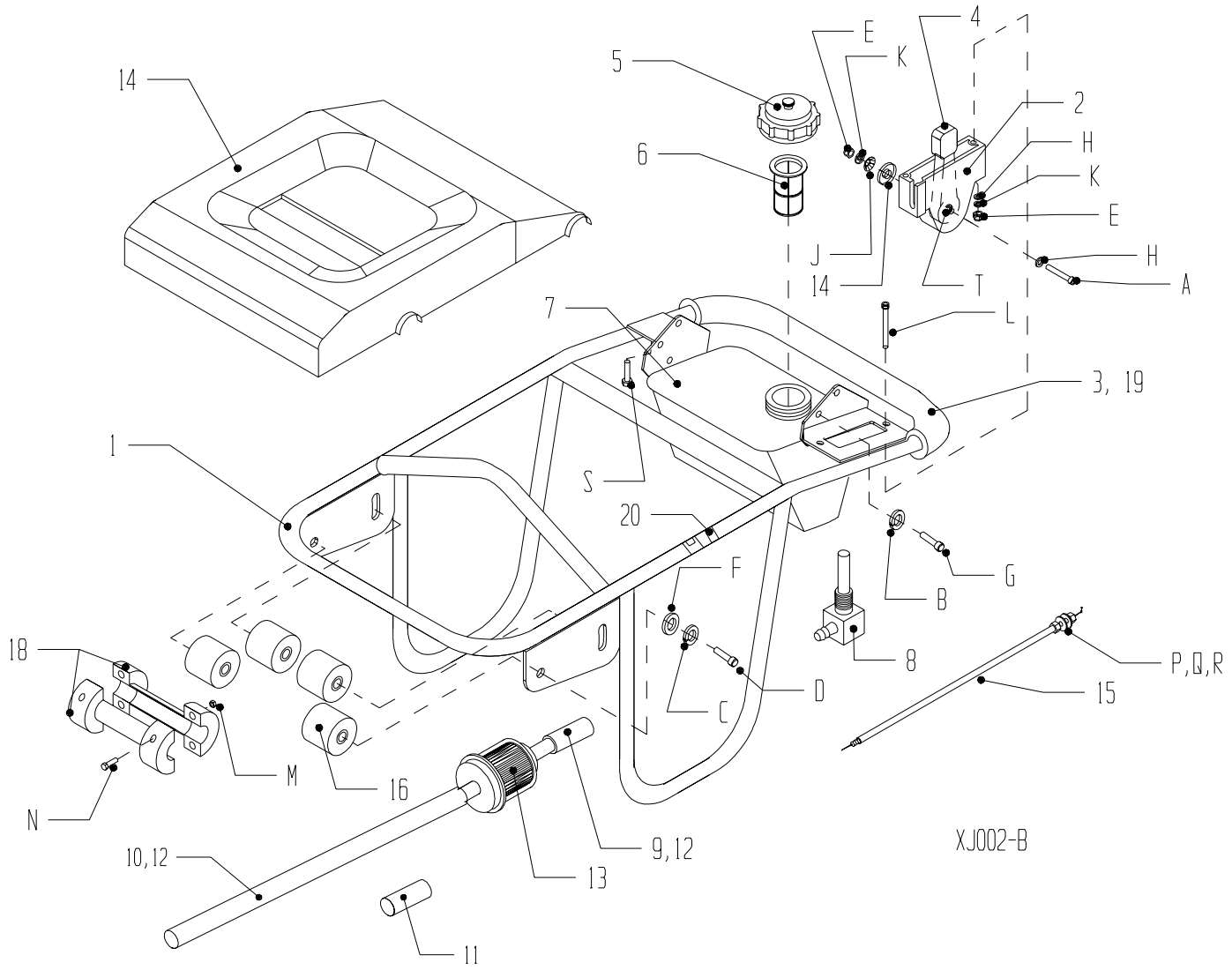
8.17 Handle and Fuel Tank - XD Diesel

Item	Part No.	Description	Qty.
1	39482-2	Handle Assembly Weld Diesel	1
2	65007-2	Guard Side	2
3	39483	Handle Grip Cushion	1
4^	39486	Throttle Cont. Conn.	1
5	35701	Cap Plastic Gas/Water	1
6	47219	Fuel Strainer	1
7	65074	Fuel Tank Modified Diesel	1
8	39056	Valve/Strainer	1
9	47385	Fuel Line 5/16 ID	4
10	39234	Fuel Filter Diesel	1
11	47386	Fuel Line 1/4 ID	1
12	39402	Washer Clutch	1
13	39387	Throttle Lever	1
14	39386	Throttle HSG	1
15	39407	Handle Wheel	2
16	42819	Tube Grip	1

Item	Part No.	Description	Qty.	DIN
A*	80810	SHCS M8 - 1.25 x 20 8.8 ZN1	2	912
B	80812	WSHRL M8 Split ZN	8	127B
C	80804	WSHRL M10 Split ZN	4	127B
D*	80803	SHCS M10 - 1.5 x 25 8.8 ZN	4	912
E	80817	NUTNY M8 - 1.25 ZN	4	985
F	80806	WSHR M10 Flat 20 OD ZN	4	125A
G*	80894	SHCS M8 - 1.25 x 16 8.8 ZN	6	912
H	80851	NUTNY M6 - 1 ZN	3	985
J	80939	WSHR Belleville 1/4 ID	1	-
K	80856	WSHR M6 Flat ZN	4	125A
L	80947	HHCS M6 - 1 x 40 8.8 ZN	1	931
M	80860	WSHRL M6 Split ZN	2	127
N	80850	NUTNY M5 - .8 ZN	4	985
P	80821	SHCS M5 - .8 x 16 8.8 ZN	4	933
Q	80940	SHCS M6 - 1 x 60 8.8 ZN	2	912
R	80247	NUTFX 5/16 - 24 ZN	4	-
S	80086	WSHRL 5/16 Split ZN	1	-
T	80495	WSHR 5/16 Plain ZN	1	-
U	80586	HWHST 5/16 - 18 x .50 ZN	2	-
V	80347	WSHR 1/4 WROT ZN	1	-

REMARK: * Loctite Required
^ Lubricate Throttle Wire

8.18 Handle and Fuel Tank - XJ 4 Cycle



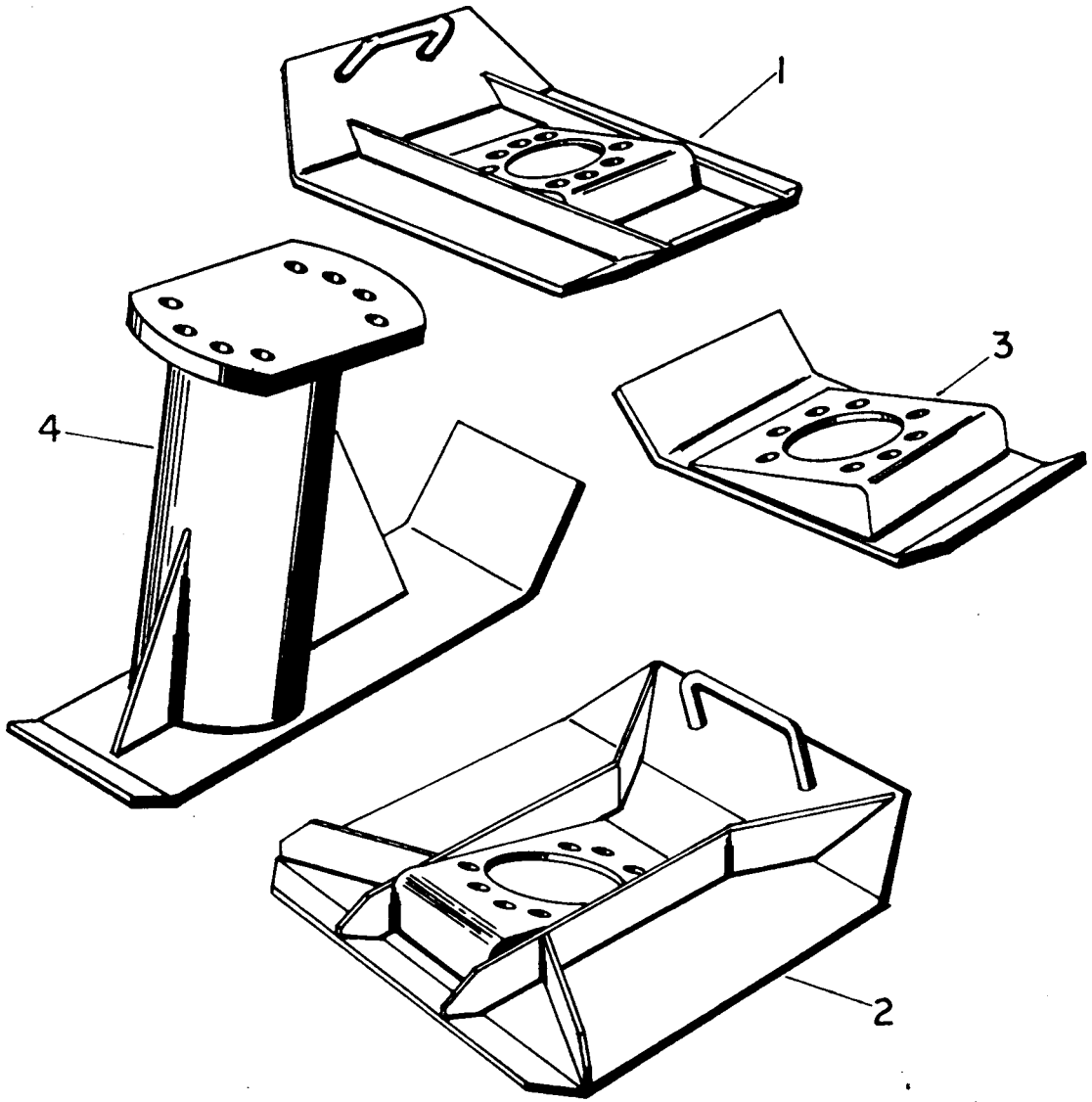
8.18 Handle and Fuel Tank - XJ 4 Cycle

Item	Part No.	Description	Qty.
1	39661-2	Handle Assembly Weld	1
2	39386	Throttle HSG	1
3	39470	Handle Grip Black Vinyl	1
4	39387	Throttle Lever	1
5	35701	Cap Plastic Gas/Water	1
6	47219	Fuel Strainer	1
7	39474	Fuel Tank Gasoline	1
8	39056	Valve/Strainer	1
9	39526	Hose Fuel 4.5mm x 2" LG	1
10	39662	Hose Fuel 4.5mm x 14" LG	1
11	47410	Support Hose 4.25 LG	1
12	47409	Clamp Hose	3
13	39660	Fuel Filter Gas	1
14	39461	Cover - Plaxtic Fox	1
15^	39485	Throttle Control	1
16	65004	Shock Mount	4
17	39402	Washer	1
18	39407	Handle Wheel	2
19	39460	Tube Grip	1
20	34091	Clamp Cable	1

Item	Part No.	Description	Qty.	DIN
A	80947	HHCS M6 - 1.0 x 40 8.8 NZ	1	931
B	80812	WSHRL M8 Split ZN	6	127B
C	80805	WSHRL M12 Split ZN	4	127B
D	80808	HHCS M12 - 1.75 x 20	4	912
E	80851	NUTNY M6 - 1.0	3	985
F	80807	WSHR M12 Flat ZN	4	125A
G*	80894	SHCS M8 - 1.25 x 16 8.8 ZN	6	912
H	80856	WSHR M6 Flat	3	125A
J	80939	WSHR Belleville 1/4 ID	1	-
K	80860	WSHRL M6 ZN	2	127B
L	80940	SHCS M6 - 1 x 60 8.8 ZN	2	912
M	80850	NUTNY M5 - .8 ZN	4	-
N	80821	SHCS M5 - .8 x 16 8.8 ZN	4	-
P	80247	NUTFX 5/16 - 24 ZN	2	-
Q	80086	WSHRL 5/16 Split ZN	1	-
R	80495	WSHR 5/16 Plain ZN	1	-
S	80586	HWHST 5/16 - 18 x .50 ZN	2	-
T	80347	WSHR 1/4 WROT ZN	1	-

REMARK: * Loctite Required
^Lubricate Throttle

8.19 Shoes for XT/XN Oil Injected and Pre-Mix



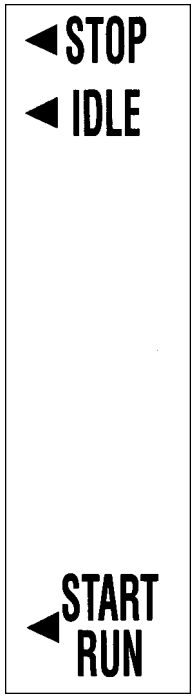
8.19 Shoes for XT/XN Oil Injected and Pre-Mix

Item	Part No.	Description	Qty.
1	22983	Kit Shoe 11" Wide XT	
2	22984	Kit Shoe Optional Shoe 15" Wide XT	
3	22985	Kit Shoe Optional 5" Wide XT	
	23145	Kit Shoe 5" Wide XN	
	23161	Kit Shoe 6" Wide XN	
4	22986	Kit Shoe Optional Extension 4" Wide XT	
	23146	Kit Shoe 4" Wide 10" Extension XN	
	23147	Kit Shoe 5" Wide 15" Extension XN	
#	22987	Kit Shoe Optional 4" Wide XT	
#	23244	Kit Shoe Optional 5" Wide XJ	

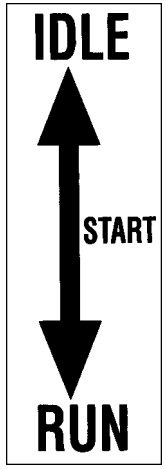
Item	Part No.	Description	Qty.	DIN

REMARK: # Not Shown

8.20 Decal Identification



55378
Diesel



55379
Robin

CAUTION

Hearing protection required when operating this machine.

Read owners manual before operating or servicing this machine.

55336

OPERATING INSTRUCTIONS

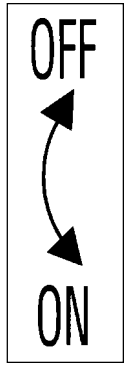
Before starting, check oil level in oil tank. Fill with a quality grade two cycle oil.

With engine off, fill fuel tank with regular grade gasoline.

To start engine: Turn ignition/fuel switch to "ON"; open air vent in fuel tank cap; close choke and pull starter rope.

To stop: Turn ignition/fuel switch to "OFF" and close fuel cap vent.

See owners manual for additional instructions.



55322

WARNING

After servicing or repairing unit, make sure oil line is full or engine failure will occur. 55345

AIR FILTER MAINTENANCE

Daily clean filter located on top and the side of the engine.

- Wash foam elements with detergent and water.
- Dry the elements by squeezing between towels.
- Relubricate with engine oil. Squeeze out excess oil and reinstall.

P/N 55337

8.20 Decal Identification

CAUTION
FUEL OIL
• USE DIESEL FUEL
• CLEAN FILTER EVERY 500hrs.
LUBE OIL
• SAE 10W30 GRADE CC
• CHANGE LUBE OIL EVERY 100hrs
• CLEAN FILTER EVERY 100hrs.
STARTING
• CHECK LUBE OIL LEVEL AND FUEL
• FOR EAGY STARTING IN COLD WEATHER, ADD 2cc LUBE OIL TO ROCKER ARM COVER
• WARM UP WITHOUT LOAD
STOPPING
• CLOSE FUEL COCK AFTER STOPPING ENGINE

PN 55325 - Diesel

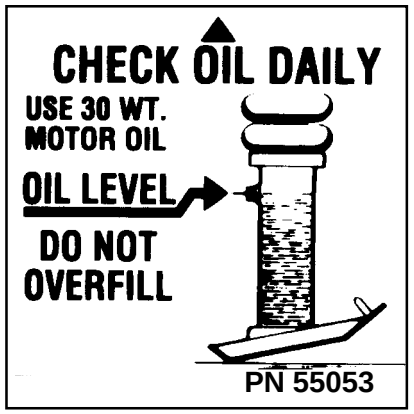
HOW TO START
① Open the fuel cock
② Put the Lever in the "START" position
③ Pull the starting handle slowly.
④ Pull until you feel resistance. Then return it slowly.
⑤ Push the decompression lever down and release.
⑥ Pull the rope hard and fast.
If the engine doesn't start, try again from ③

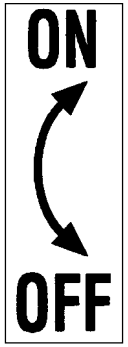
PN55324 - Diesel

NOTICE

CONTACT THE MANUFACTURER IMMEDIATELY AT 1-800-888-9926 IF SAFETY OR HAZARD DECALS OR OWNER'S MANUAL ARE MISSING FROM THIS EQUIPMENT.

55156





55377

CALIFORNIA PROPOSITION 65 WARNING:
Operation of this equipment and/or engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Bred Tough. Technology Born to Work.
The Way It Ought To Be.

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